

Learn step-by-step from figure drawing to anatomy and movement!

## Human body drawing

by Kim Rak-hee Written

by Kim Rak-hee Supervised

by Yoon Gwan-hyeon

# Barn

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The human body is like the universe.  
Greek artists knew this long ago. So all the Greek  
gods were represented in human form. It means that all the  
literature and arts in the world exist in the human body.

The first time I saw Kim Rak-hee was in a lecture room at Sejong University  
a long time ago. I was sitting quietly alone in the corner of the classroom and drawing delicately  
with a pencil, and it was dazzlingly beautiful to see you immersed in the drawing.

Rakhee wasn't a genius  
I was becoming like a genius before  
I knew it. It was a happy thing to see a little  
genius and live. However, it took a long time for Rakhee  
to present his paintings to the world.

Now the little genius has revealed all his know-how  
I made one book.

Like the martial arts vision of an absolute master that never existed in  
Gangho, this book will present a new world of human body drawing to many artists.

Even for me who did not major in human anatomy  
This book made the best gift.

I wish you all the best in the future  
of this little artist.

2019. 11.  
Hyunse Lee



## testimonials

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The first time I came to know the name 'Kim Rak-hee' was around 2015, when I was writing the last part of [Buddha's Anatomy Notes]. Since I am not a medical major, I had a lot of worries ahead of the deadline, but at the same time, I saw Kim's <Fantastic 4> cartoon work at a work meeting with a Marvel representative. I didn't try hard, but it was a shock. I have often seen artists who are good at single-cut pictures, but masters who can freely manipulate realistic human bodies in numerous cuts are extremely rare. Admiration as an anatomy book author and desire as a writer in the same field came at the same time. If only I could have this artist's know-how!

No matter how great an anatomy is, not everyone can draw well. The artist's own secret technique, which he learned by himself while facing countless blank sheets and repeatedly fighting in real life, is different from the realm of simple 'art anatomy'. He had to dig up his know-how somehow. I hurriedly finished the book, contacted him without any hesitation, and urged (actually, close to threatening) to publish the book with all my speeches. I finally succeeded in pushing my back to the publisher, and I was delighted.

However, after receiving the edited copy, I felt sorry for myself. The feeling of facing this book now and writing a recommendation is honestly complicated. It's difficult to advertise. I hope this book doesn't sell too much. It is because of my greed that this book is the only book I have.

Seok Jeong-hyeon (painter, (Author of Shakyamuni's Anatomy Notes))



It reminds me of the time when I saw the manuscript of Kim Rak-hee's short comics a long time ago. I admire the expressiveness and perfection filled with tremendous density, but what was more surprising was his words as he sharpened a 0.5mm sharpener with a knife. "Brother, that's not over yet."

Artist Kim Rak-hee's attitude towards painting is more than a perfectionist. His detailed portraits, in which he even memorized the location of bloodlines, were enough to humble even the artists who had studied the human body. This is also the reason why I was full of anticipation when he first told me that he would make a human body textbook.

『Kim Rak-hee's drawing of the human body』 has kind explanations built on his many years of teaching experience. In addition, it is full of various illustrations that can be opened without worrying from the basics to those who need advanced courses. Above all, it is all the more special because there are illustrations that help 'three-dimensional understanding', which I think must be in human body drawing textbooks. Cute illustrations in the middle of learning that may be blunt help understanding. I am very happy that such a wonderful textbook came out of the hands of a close colleague, and I am encouraged that it can be a healthy stimulus as a fellow painter.

I believe that any creation that expresses people, whether in writing, drawing, or video, is a noble work. I hope this book is in the hands of everyone who needs the skills to bring characters to life, including me who draw cartoons.

Younggon Lee (Cartoonist)



## testimonials

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The first time I saw author Kim Rak-hee was about 10 years ago when I was in college. All of us were students studying drawing and cartoons, but among them, the method of studying the human body by artist Rakhee Kim left a deep impression on me. While watching bodybuilder videos, he observed the movements of the human body from various angles. It was quite impressive to see him studying while capturing even the changes in muscle movement according to the posture of the person. I remember artist Kim Rak-hee of those days, who always played videos related to the human body on the monitor and repeated visual training with a textbook next to her during her work.

A lot of time has passed and now he has written a human body drawing book himself. This book provides easy-to-understand explanations from skeletons to figured three-dimensional expressions. This is an easy way to approach any position. The expression of the muscles and skin on top of it conveys vividness as if you can feel the movement.

The know-how accumulated over many years as a cartoonist, illustrator, and lecturer is fully integrated into one book. I am sure that readers will find themselves who understand the various postures of the human body in depth as they follow this book.



Yoon Joong-geun\_Pilmong (illustrator)

I have known him for more than 10 years, including life in the US since my college days in my early twenties. He liked his spirit and persistence, and he was one of those people who came to trust him more than anyone else while watching him from the sidelines. I couldn't help trusting him because I knew that my brother's affection for the human body was unique and that he had accumulated knowledge for a long time.

From the first time I met him, his professionalism about his painting was very special compared to ordinary painters, and that was fully reflected in his painting. Nevertheless, he is still a developing writer. I am also a writer who continues to recommend to students while teaching students for more than 10 years.

His painting becomes a study. Even if you don't rush to study, just watching will definitely help. I did, and I think a lot of people do. Helpful. Many people who read this book will also very strongly agree with this statement. he is helpful

Inhyeok Lee (illustrator)



# entering

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I struggled a lot for a long time while studying painting on my own. Since no one was there to tell me the answer, I asked myself 'Is this the right way to do it?' Drawing a picture is like facing yourself. You can see how far you understand, how immersed you are, and whether your mind is impatient or calm by looking at the picture. Having a heart in a picture also means that a good picture can come out only when you have a calm mind. As the process of holding each picture to the end through repeated trial and error accumulates, you will discover it before you know it. The self that has changed with the painting.

This book consists of how to interpret the complex human body in a simplified form and how to study the working principle of human body movement through this and apply it to actual drawing. As I systematized the theories I had been researching so far and made picture materials so that many students could understand them, it eventually gave me an opportunity to study my own basic skills from the beginning.

The more you study the basics, the more new it becomes. It feels like correcting a stiff posture that is leaning to one side without knowing it. Studying the basics is the first knowledge you learn when you enter painting, and at the same time, it is a 'self-objectification work' to shake off the wrong habits that you have to do steadily even after you become skilled in painting. It's not a gateway to pass through, but it's like stretching that you always have to do to balance your body.

Working as an animator, film storyboard writer, illustrator, and American comics artist, what I felt at various work sites was that, in the end, 'the basics are the most important' in any genre of painting. I had to study the human body again to solve the problem that the picture didn't come out the way I wanted or it took too long to draw a picture I liked.

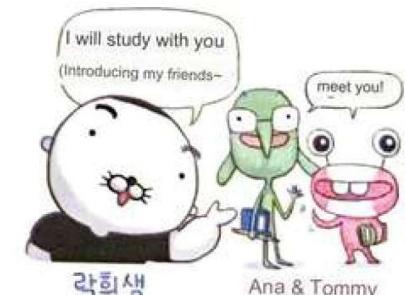
While teaching students studying painting, I was able to see up close what the students struggled with the most. There were various types of concerns, but the fundamental problem was 'insufficient basic skills'. The methods

in this book are not just a means to help understand the theory, but are also the working methods I always use when I actually draw. I hope this book [Kim

Rak-hee's human body drawing] will be a guide to give you directions and will be a book like a pace maker for a marathon that will give you strength again at the moment you get tired of drawing. nice to

November 2019

Author Rakhee Kim



Congratulations.002

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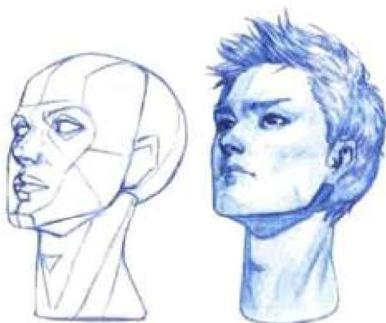
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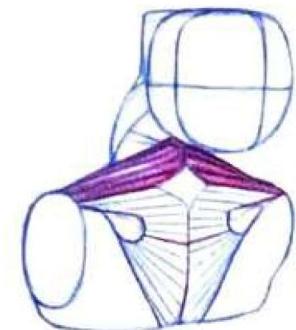
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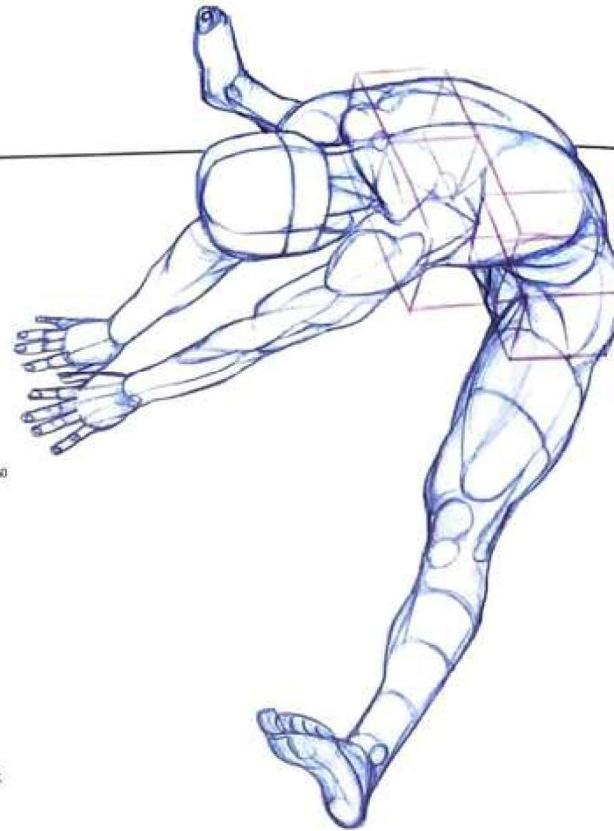
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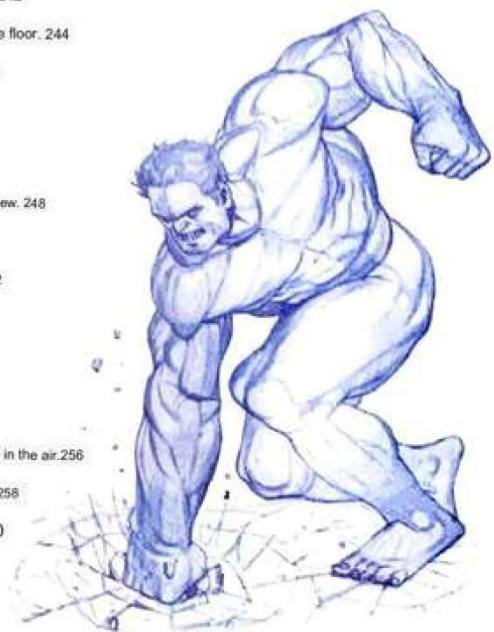
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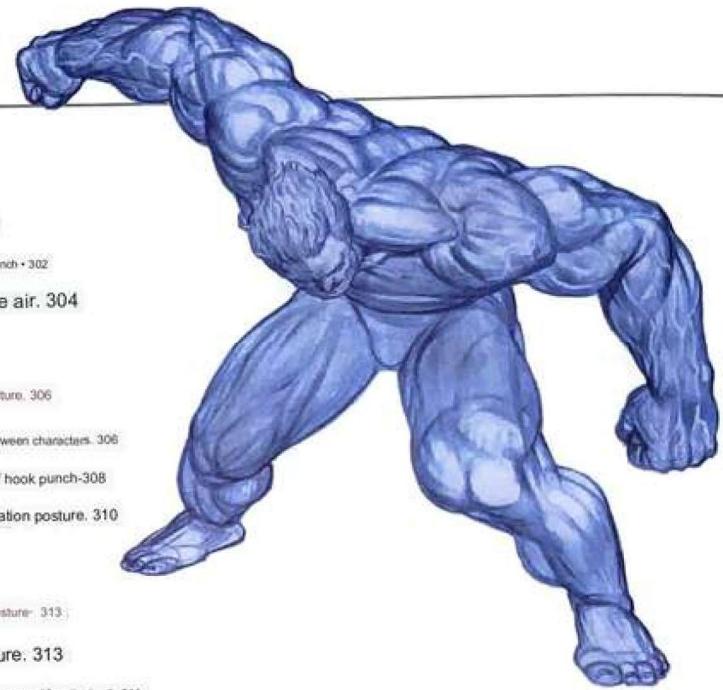
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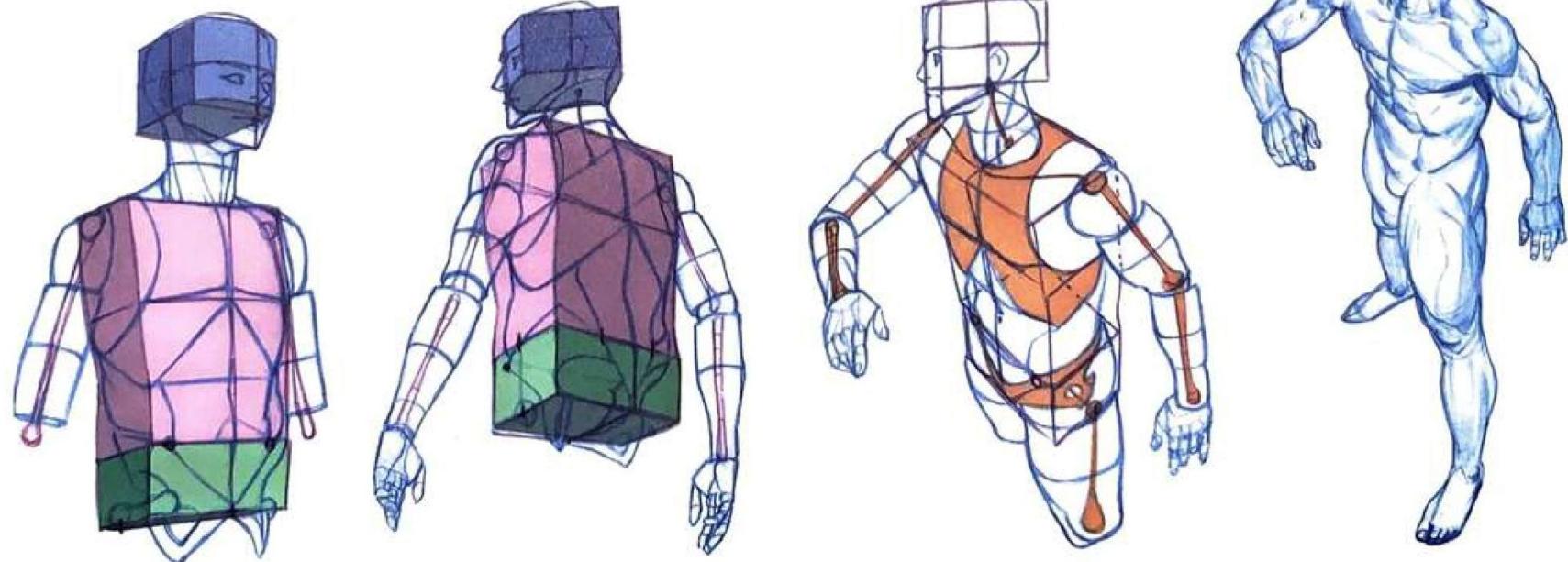
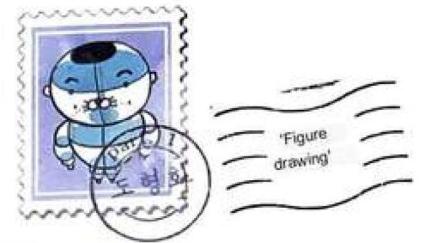


## figuration on the skeleton

Just like practicing vocalization when learning a song for the first time and developing basic physical strength first when starting an exercise, SOLID FIGURE should be the basic basis to draw the human body well. Figure drawing of the human body is not simply connecting and attaching shapes as if they would fall apart if you simply 'knock' them, but overlaying shapes with the flow of the human body on top of an accurate skeleton to realize the human body is like a blueprint.

Through the skeleton, you can check the most basic and important information of the human body, such as proportion, center of gravity, and motion.

You can also study the volume of the body and the large flow of the human body by applying shapes on the skeleton. If the skeleton is unstable, the human body will look awkward even if a high-quality description is added. Figuration is a very effective way to understand the complex human body in three dimensions, and through this, it is possible to express various angles and postures out of a flat picture. In this chapter, we will understand the core driving principle of each joint by simplifying the basic skeleton of the human body, and apply the volume of silicon material on top of it. If the skeleton is excluded from the figure design stage because it is not visible, or if the external appearance is set like a wooden doll, the movement range of the joint moves differently from the real one and the movement is limited. Therefore, it is possible to realize a natural movement like a real person moving only when soft silicone figures are applied on the skeleton, which is the axis of movement.





## human figure interview

01  
C

Human figure

wood carving



flow diagram



muscle drawing



oval shape



## Q&A



I don't know how to study because each book has a different shape.



The interpretation of 'how to simplify the shape?' varies from artist to artist. The important thing is that every movement of the human body must be able to be realized in 3D from any angle. Figure drawing that is far from the flow of the human body, works only in one posture, or does not express the movement of a person is wrong.

wood carving



Since the number of joints is too small and the material is hard, there are limitations in realizing the movement of the human body.

flow diagram



You may get into the habit of adding exaggerated flow to all postures or excessively deforming.

muscle shape



I can't understand the principle of movement and the form is too complicated.

oval shape



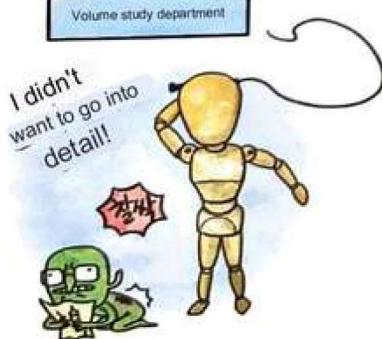
The front, side, and rear boundaries are ambiguous. The form is too simple to theorize.

It won't be used as a figure drawing to study all the poses, but instead,

We will take you to each department.



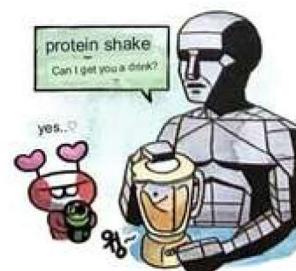
Volume study department



Dongda Research Department



Muscle Keratinization Department



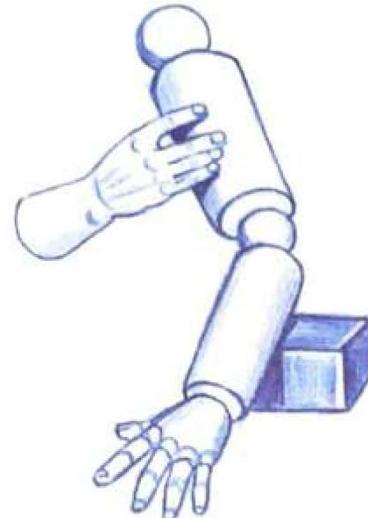
proportional study department



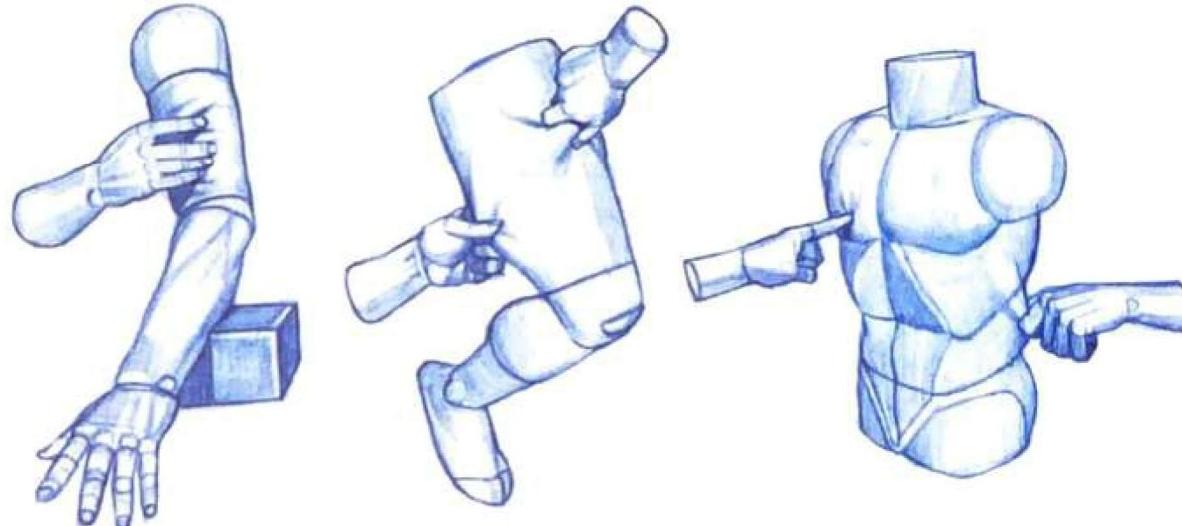
## Material of duck boat human figure



The material of this figure is hard, so the surface is not pressed or stretched, and the outline is expressed in an overly simplified flow, making it unsuitable for use as a human body figure.



The surface of this figure is a material that stretches or presses like our skin, and it is suitable for use as a human body figure because the large flow of the human body is well expressed.

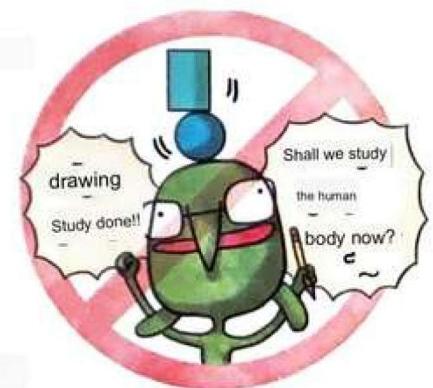


Because of the hard feeling that the word 'shape' often gives us, it is easy to perceive a shape as a solid object with a fixed shape. However, if you

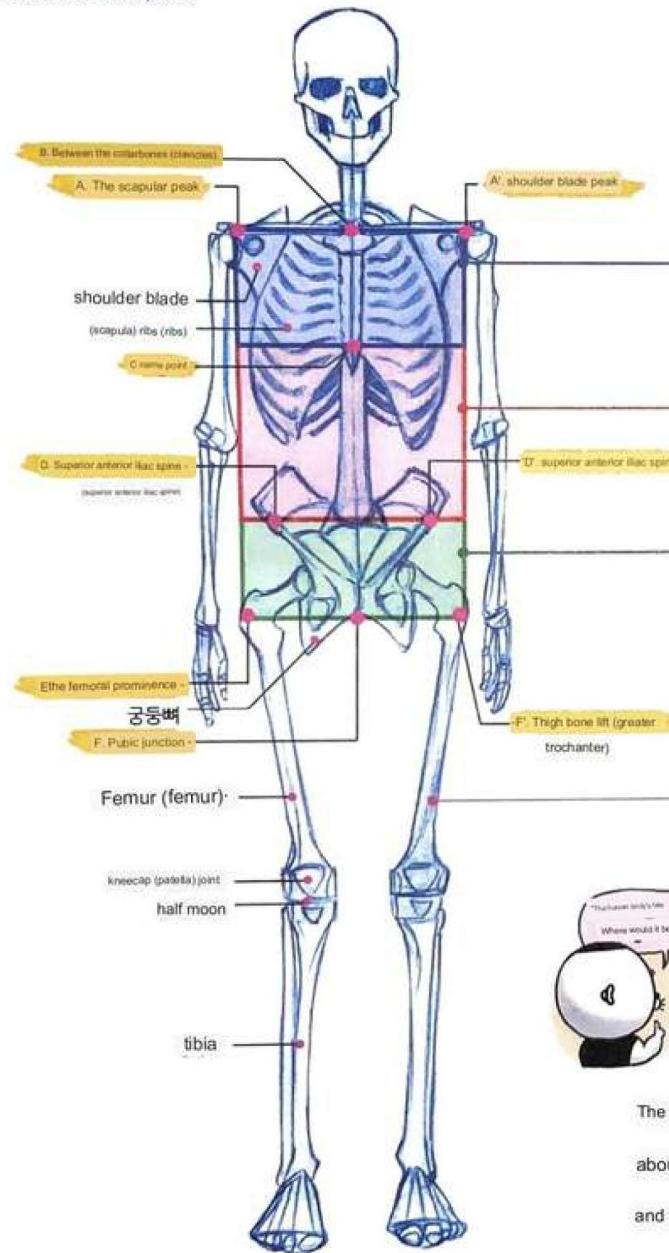
think of the human body as an overly simplified figure, you will get confused when drawing due to the volume of the figure, which is different from the actual flow of the human body.

The shape we will use is made of a soft material on the outside and a solid skeleton on the inside, just like the real human body. The joints are not made like the joints of a toy, but can implement the movement of the human body in a simplified form of the bone joints of the actual human body. It doesn't make a 'popping' sound when figures collide with each other, but when pressure is applied, they are pressed and when pulled, they stretch. In other words, it is not a sphere and a cylinder connected together, but a figure that shows the great flow of the human body.

'Figure drawing' is often neglected as it is regarded only as a basic practice method. After sketching it out a few times, I think I understand it enough and move on. It takes a lot of research and practice to draw human body figures in proportion, volume, center of gravity, and natural movements. Since the human body figure has the same structure as the actual human body, the human figure appears immediately by erasing the lines at the junction where the figures are connected. Human figure drawing is a must-have study method for everyone from beginners to experienced students.



■ Grab the front point



In this book, we focus on the 'body box', which is the basic frame of the human body figure. For convenience, I'll put the numbers 1, 2, and 3 on the boxes to call them.

**Box 1 (chest)**

Draw the top of the box by connecting A, B, and A'. C is located in the center of the bottom of box 1.

**Box 2 (Waist)**

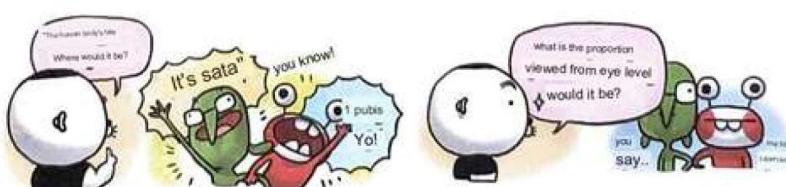
This is the box that undergoes the most deformation due to bending and rotational movements of the waist.

**Box 3 (pelvis)**

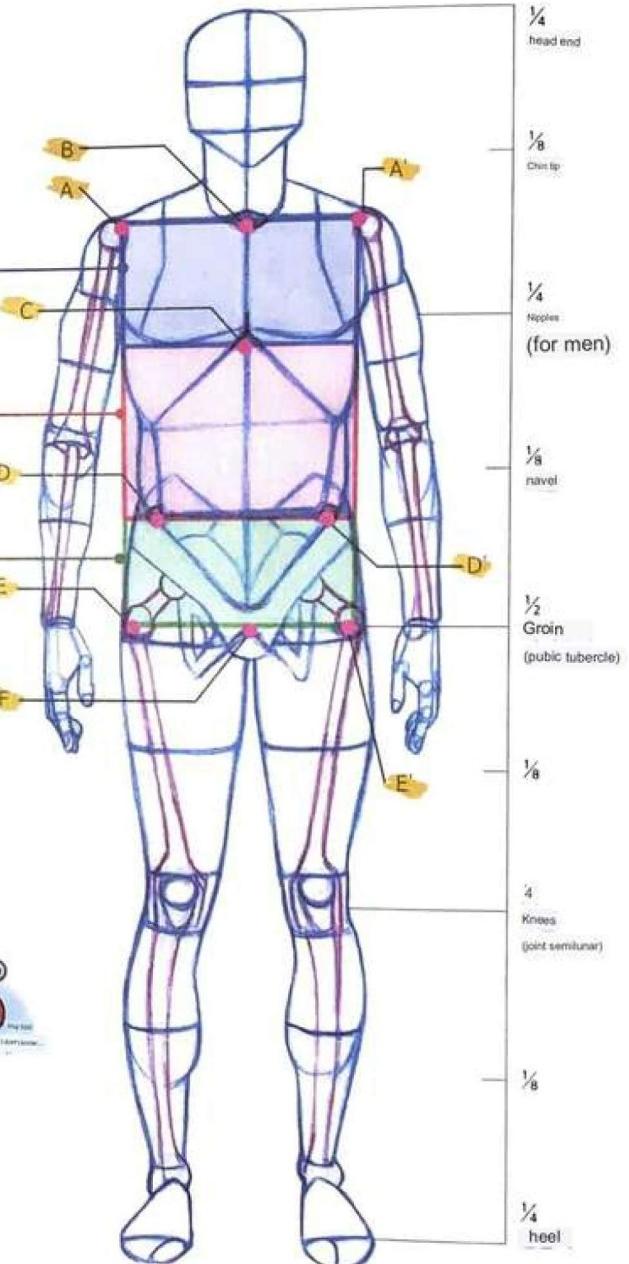
D and D' are slightly inside the corner of the box. If you lower A and A' vertically, they meet E and E'. F is at the center of E and E'.

inclination of the leg bones

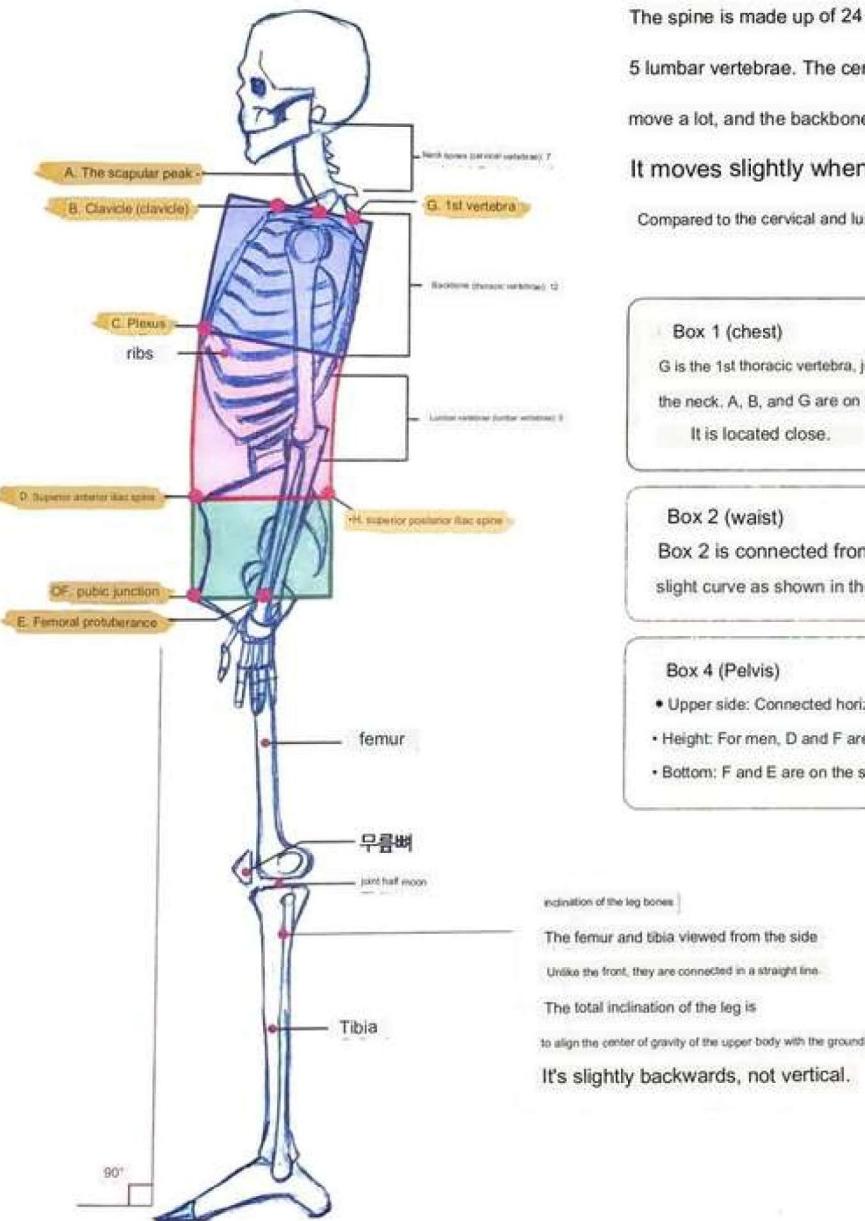
As shown in the picture, when you stand at attention, the femur bends inward and then changes to a vertical position at the tibia.



The proportions shown on this page are for the person viewed from a distance, about shoulder height. The distance between the looking eye and the target, and the position of the eye level change the proportion.



■ Grab the side point



The spine is made up of 24 segments: 7 cervical, 12 thoracic, and 5 lumbar vertebrae. The cervical and lumbar vertebrae move a lot, and the backbone does not move very well.

**It moves slightly when leaning, bending, or twisting.**

Compared to the cervical and lumbar vertebrae, they are relatively immobile.

**Box 1 (chest)**

G is the 1st thoracic vertebra, just below the 7th cervical vertebra that sticks out when we touch the back of the neck. A, B, and G are on the same line. A is slightly dorsal to the box rather than directly in the center. It is located close.

**Box 2 (waist)**

Box 2 is connected from Box 1 to Box 2 with a slight curve as shown in the picture.

**Box 4 (Pelvis)**

- Upper side: Connected horizontally from D to H, where the superior iliac spine emerges.
- Height: For men, D and F are perpendicular to the ground.
- Bottom: F and E are on the same line. The position of E corresponds to the point of the telegraph.

Inclination of the leg bones

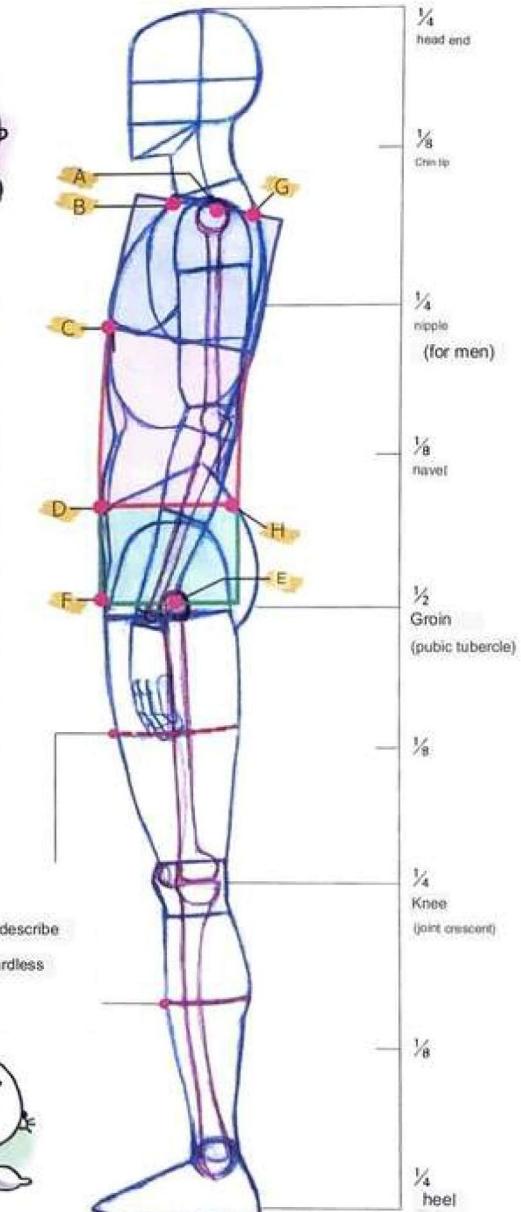
The femur and tibia viewed from the side

Unlike the front, they are connected in a straight line

The total inclination of the leg is

to align the center of gravity of the upper body with the ground

It's slightly backwards, not vertical.

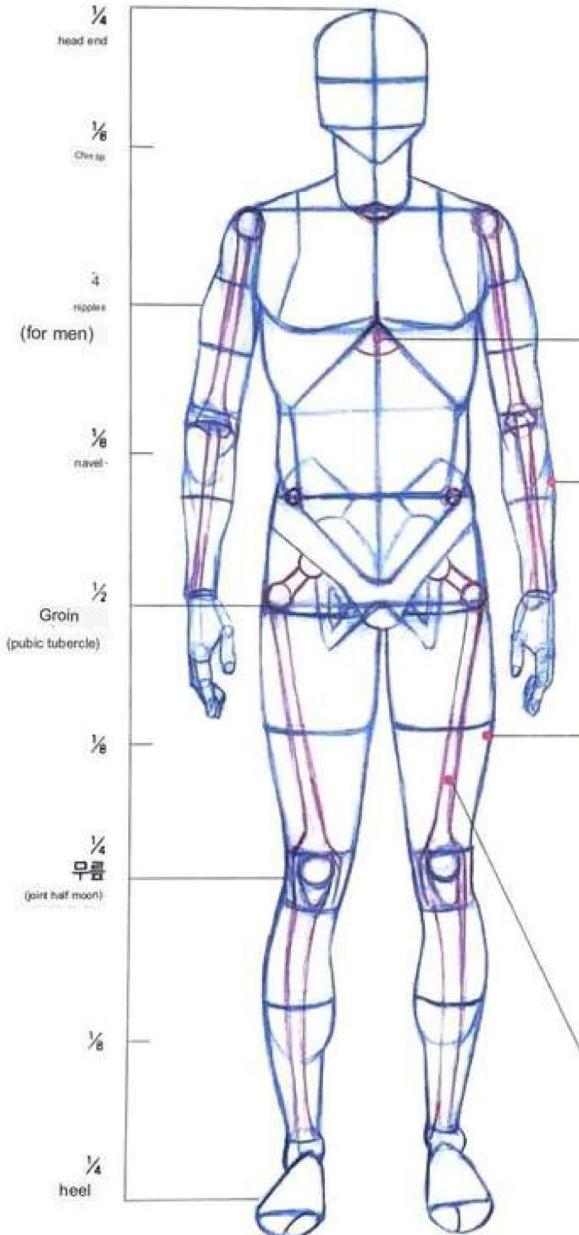


parabola

These parabolas at each joint describe the inclination of the body regardless of proportion.



• Male and female front.



When studying male and female bodies,  
practicing with men and women of the same height will  
help you compare body differences more clearly.

Angle difference between male and female scapulae.

The angle at which the ribs diverge is greater in men than in women.  
Big.

The difference in the angle of which men and women bend their arms.

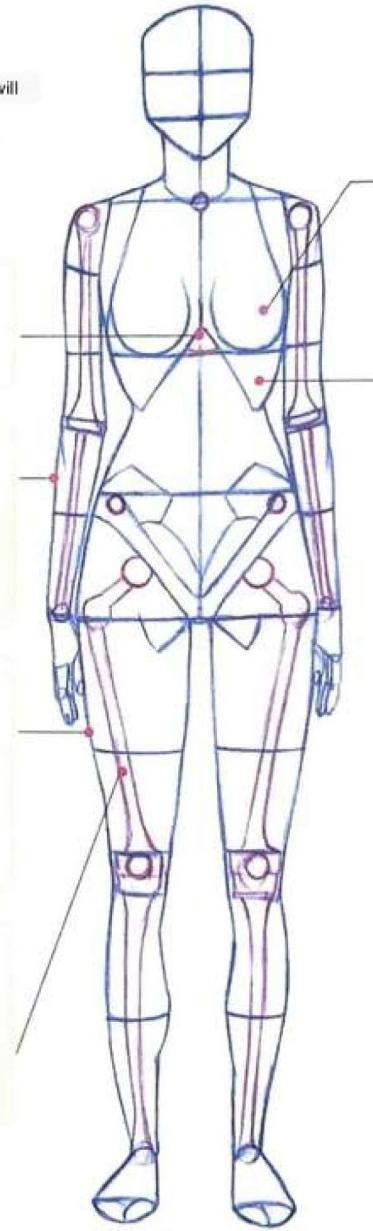
When the arm is comfortably lowered, the elbow bends outward in men and inward in women. This difference is caused by the thickness of the muscles around the armpit.

Difference between male and female thighs.

There is a difference in that men's thigh thickness rapidly decreases at the knee because of their muscles, while women's thighs gradually taper with a smooth flow. A female athlete's muscular legs show the same flow as a male's.

femur

Compared to other parts of the body, the position of the femur bone when viewed from the front is not in the center of the body, but outward. This is a common feature of both men and women.



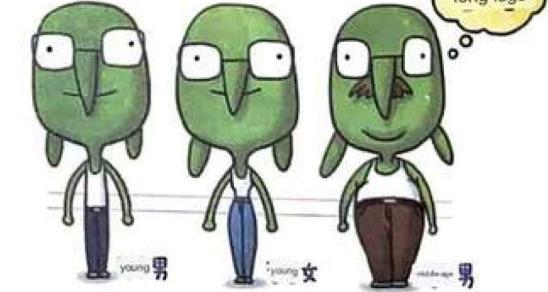
female body proportions

The point of human body proportions is slightly above the pit of the stomach for both men and women. In men, this point is the same as the nipple, but in women, the chest is lower than in men, so the point is located slightly above the nipple.

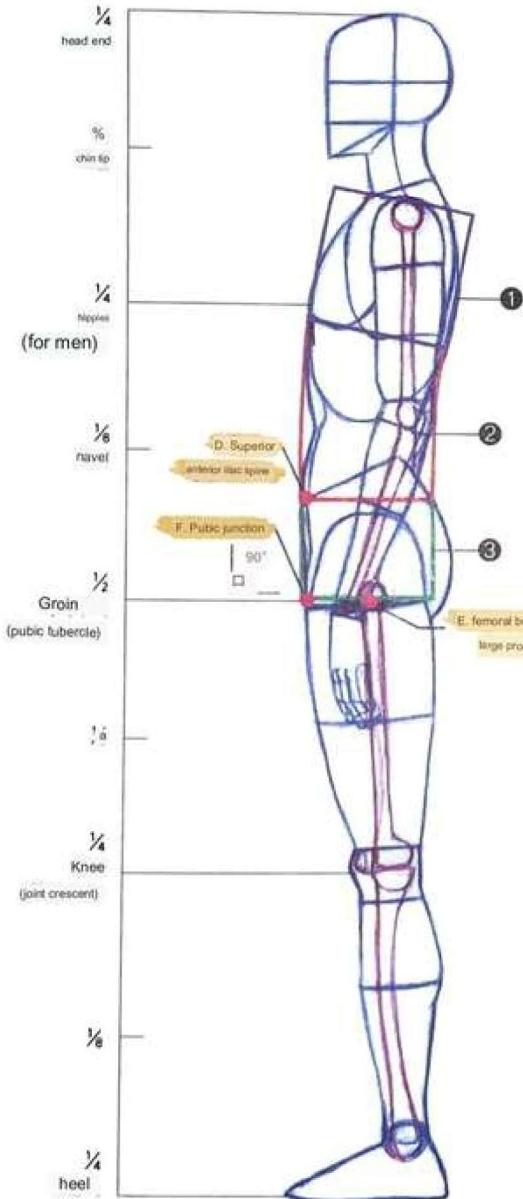
Differences between male and female ribs.

Men's ribs are wider than women's, and women's |  
The lower part of the ribs is characterized by a sharp narrowing than that of men.

thinnest part of the body



Men wear a belt around the pelvic bone line when wearing pants. Women's legs are narrower at the point where their ribs end, so they can wear so-called 'babe pants' that go up to the navel, making their legs look longer than men's. Men can only wear baggy pants when their stomachs come out.



## Q&A



Why is the spine curved in an S shape?



When we walk or run, when we put our feet on the ground, the body is pressed in the direction of gravity. At this time, thanks to the spine that is bent like a spring, you can mitigate the shock. If the spine were straight, like a straight column, the impact would not be alleviated and would break.

### Tilt of box 1 (chest)

When you stand still, your body leans back slightly, so the box also leans backwards. A woman's upper body leans back more than a man's due to the weight of her breasts.

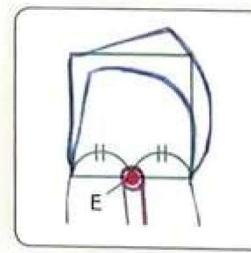
### Thickness of box 2 (waist)

The width of the side box is the same for men and women.

### ④ Tilt of box (pelvis)

The angle of D to F is vertical for the male, and the female is leaning forward instead of vertical to balance box 1.

E is located in the center of the bottom of box 3.



## box proportions

In order to accurately represent the volume of the torso, it is very important to find the point of the box while looking at the picture and practice drawing the box.



## Q&A



When I draw an arm, I can't get the arm's length right.

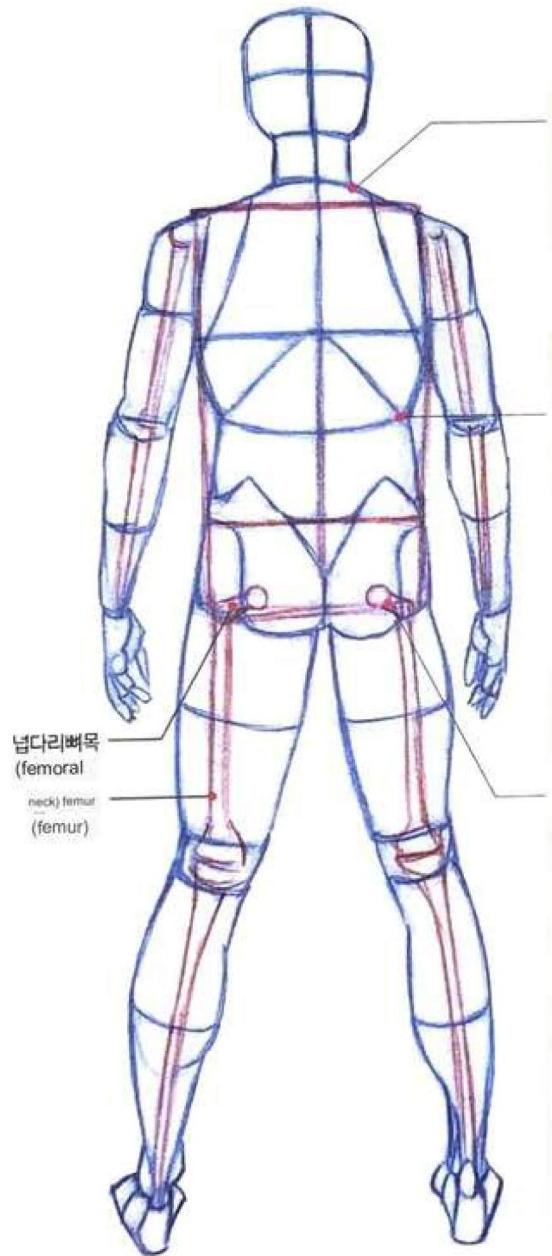


When you stand at attention, your wrist touches the large process of the femur, which is the point of the whole body. It's a little easier if you hold the length of your arms based on this.

## joint size

For women, please draw small joints of the bones.

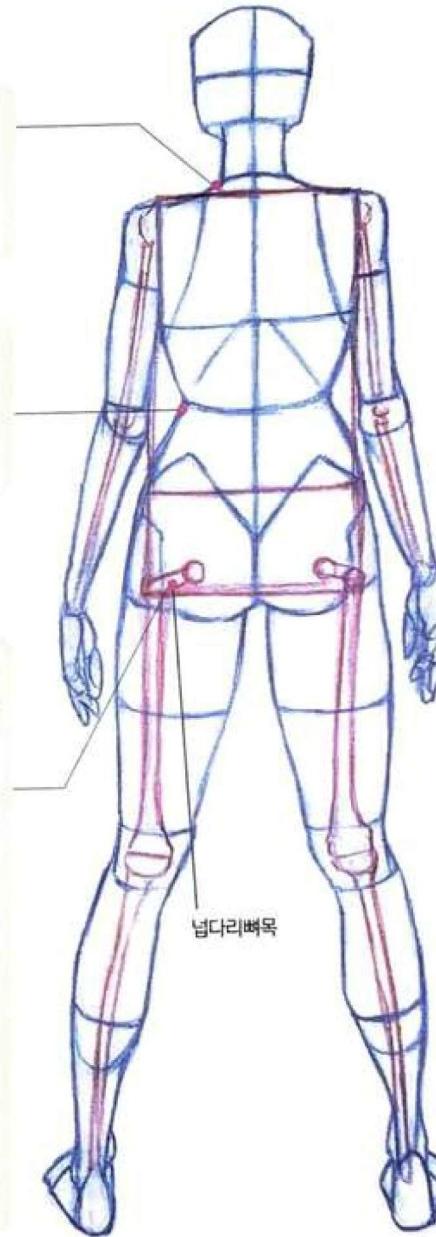
■ Male and female back



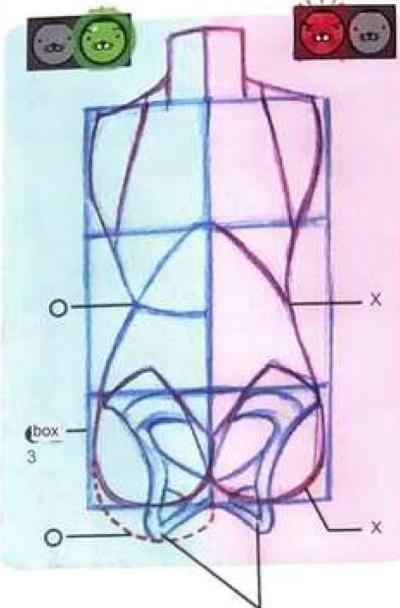
Trapezius muscle (trapzius muscle)  
Men's muscles are developed, so the height of the trapezius is higher than that of women. Women have lower trapezius muscles than men, which makes their necks look longer.

body  
Men have a straight side line, and women have a concave flow in the middle with a contrast between small ribs and buttocks.

Are women's hips large only because of their large pelvic bones?  
Although women's pelvis is bigger than men's, the difference is not as big as I thought.  
Women's buttocks look bigger not only because of the size of the pelvis, but also because of a variety of reasons, such as the angle of the femoral neck being more bent than men's and the distribution of fat in the buttocks due to the influence of female hormones. Also, women are characterized by a gap between the groin due to the angle of the femoral neck.



Incorrect note Female waist and hips



lower part of the hip bone

1. To express a woman's narrow waist  
The flow of the waist is only excessively curved  
Rather than drawing, the ribs are over  
The angle changes at the point where the pelvis begins  
It's good to save points.

2. You can't stuff your ass in box 3. The buttocks come out of the box as much as the length of the lower part of the hip bone branch that looks like a handle under the pelvis. This is a common feature of both men and women.

A stable center of gravity is often referred to as 'vertical'.

It's easy to think. an object tilted

If it is bent, the center of gravity is somehow endangered

I can feel it. However, the flow of the human body

It is made to follow the curved shape of the spine.

The information needed to draw a half-side

First, the angle of the bone viewed from the front and side,

Secondly, the thickness of each part, and thirdly

There is a trend of movement. If half side

If it is not drawn well, the front and side

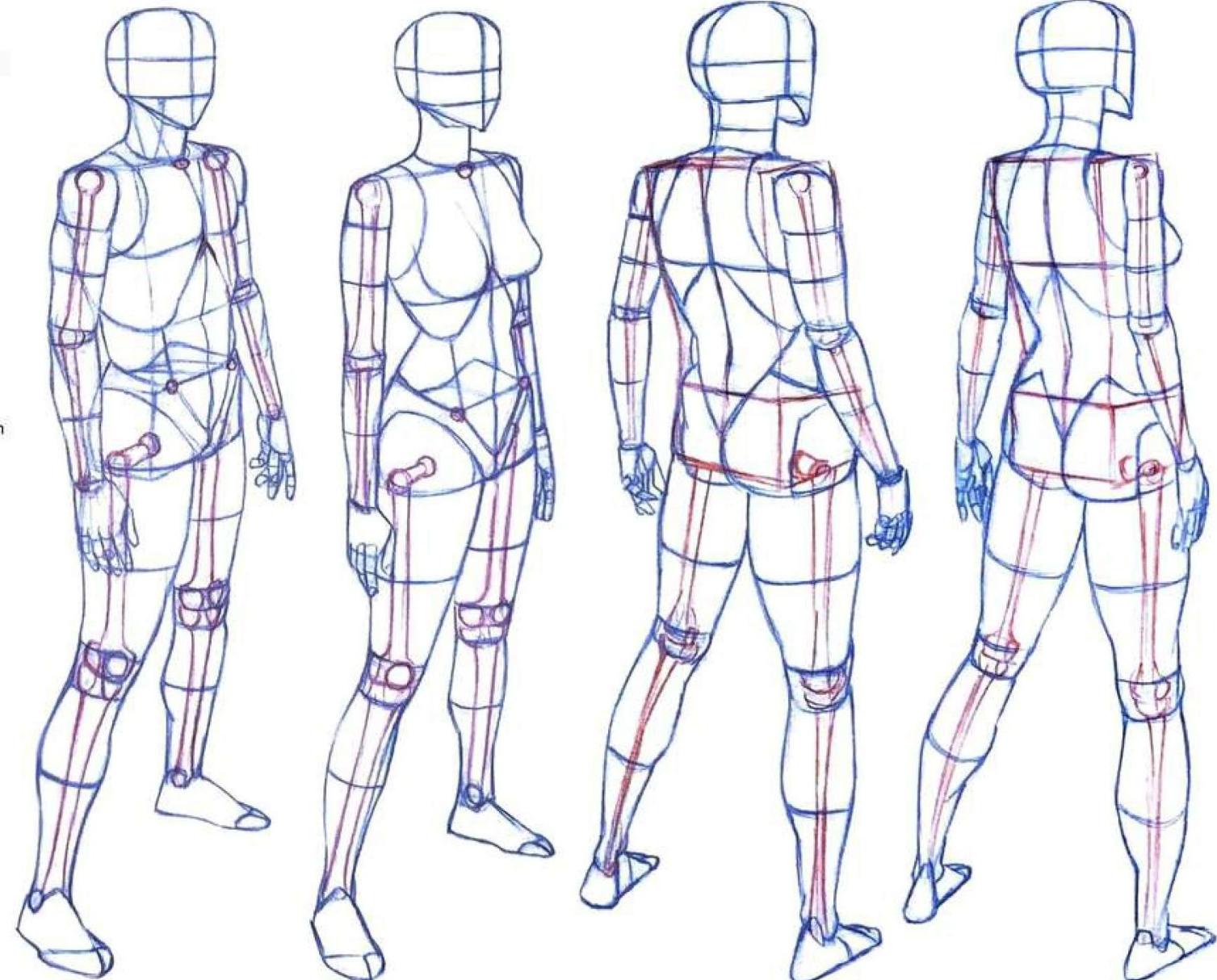
It is because of a lack of understanding, so once again

Take a close look at the information on the side!

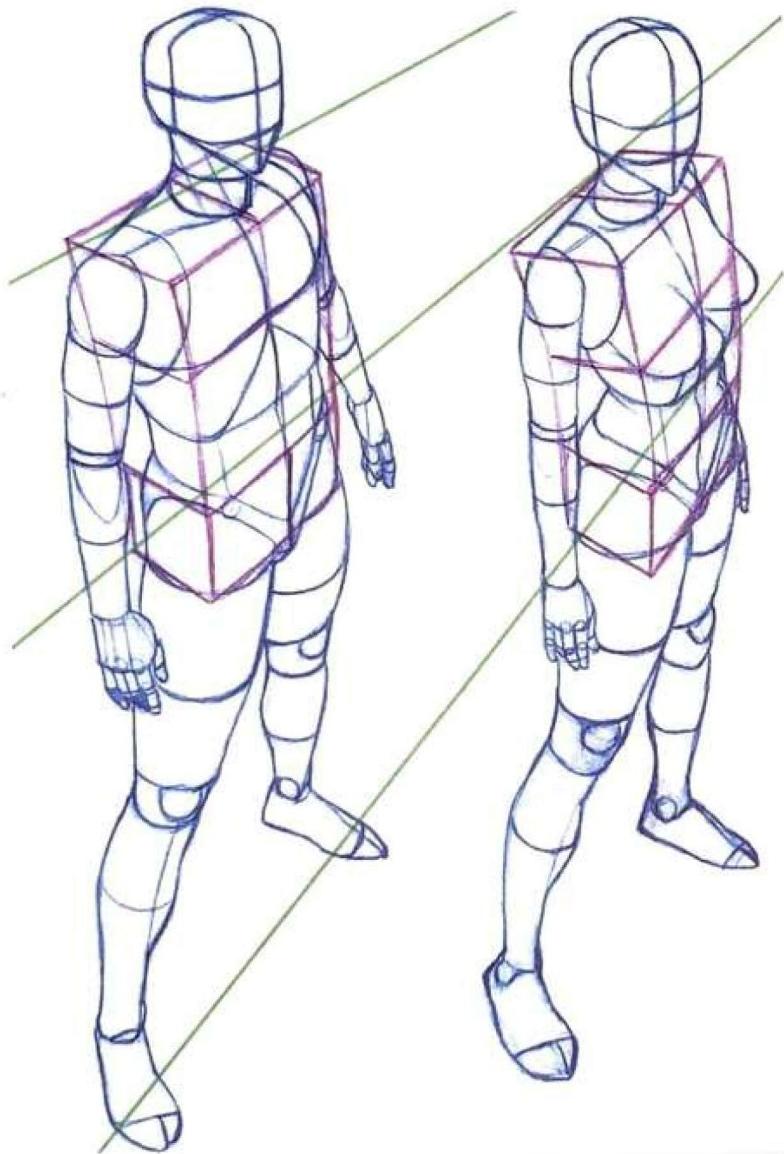
Incorrect note The wrong flow of the human body



This is a bad example  
drawn with the idea  
that it won't fall if you stand  
it upright.



■ Male and female high angle and low angle



◀ High angle:

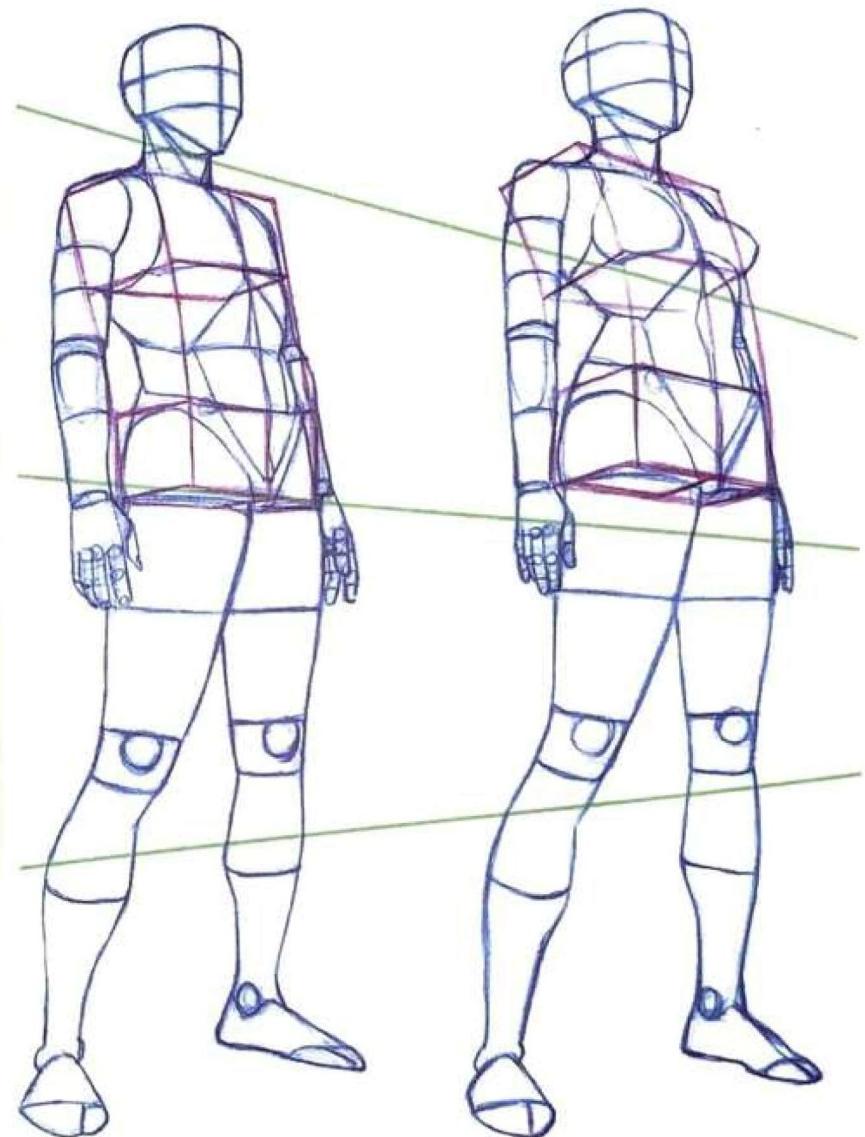
As the face and neck 'overlap', it is important to apply perspective while covering parts and maintaining the proportions and volume of the body as a whole.

body flow

You can see that the body is leaned back even at high and low angles.

Low Angle>

Many students find the low angle more difficult than the high angle. It's because I have a habit of drawing the face first, or I don't study the lower body more than the upper body. To draw a low angle well, it is especially important to study the lower body.



In high angle and low angle, the proportion of the human body changes depending on the viewpoint, so it becomes complicated and difficult to apply equal parts. From this point on, the proportions of the human

body should be adjusted with the senses, but the space should not be grasped with the senses. If you draw a character first without thinking about the space, or if you roughly draw the perspective line, there is a high probability that the human body will be drawn with an incorrect angle. It is important to make space and draw the human body according to the slope of the lines heading to the vanishing point after clearly setting the eye level.

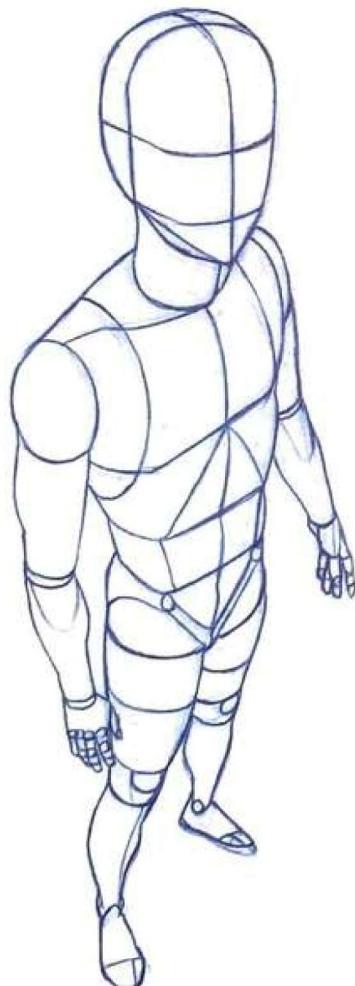
probability that the human body will be drawn with an incorrect angle. It is important to make space and draw the human body according to the slope of the lines heading to the vanishing point after clearly setting the eye level.

■ Common mistake of high angle or low angle

① In the picture of wrong answer No. 1, the perspective was exaggerated, so the head was enlarged and the body was drawn rapidly.

② The picture of the 2nd incorrect answer could not be applied with a high angle or a low angle, and was drawn only from a normal perspective.

It is because of the habit of drawing with intuition that the drawing is too distorted like the picture with incorrect answers 1 and 2, or it is not possible to change the angle at all. Before the human body, we need to study about 'space'.



incorrect answer picture for number 1

This is a characteristic that is often seen in those who draw only figures without setting up a space. If you get into the habit of drawing only characters without a background at high and low angles, you will end up drawing characters with too much perspective even if you don't intend to, because you get caught up in too much perspective. This character is also likely to be drawn with an incorrect sense of proportion.

incorrect answer number 2 Picture ▶

I tried to draw a character with a low angle whose eye level is close to the position of my feet, but I couldn't boldly change the perspective, so it was drawn in proportion to the normal point of view. It's the opposite situation to the wrong answer picture 1, but the solution is the same. After creating a space by setting the exact eye level, draw a person according to the theory so that you can draw a human body that fits the angle you want, breaking away from the habitual proportions.

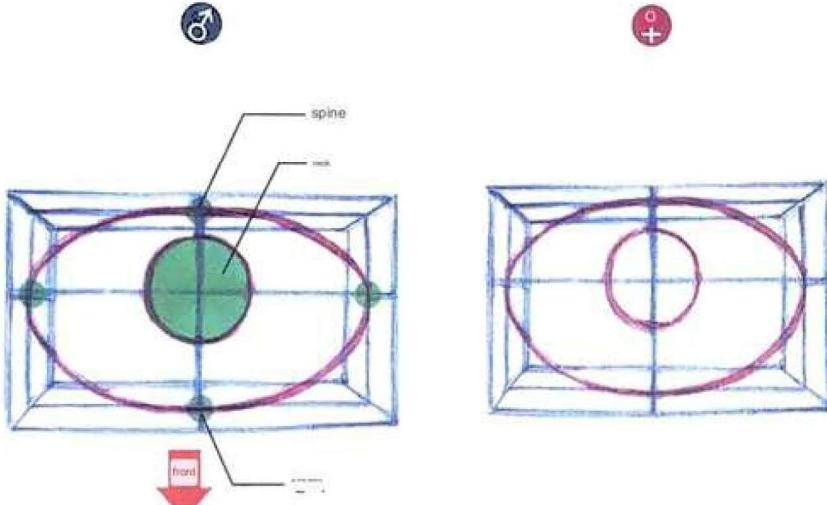


### Steps to study painting

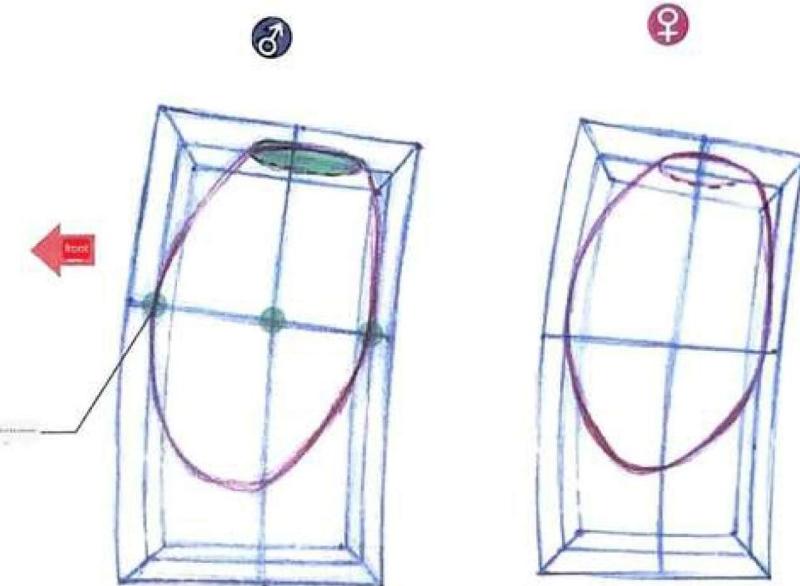
Beginners learning to draw often try to express an impactful posture or angle without having the basics in place. However, the point that should not be missed when learning painting is that painting is an 'applied subject'. Just as you need to understand the basic theory of addition and subtraction when learning mathematics, you can apply all the numbers to get an answer.

## Chest cage (ribcage) in 2 boxes

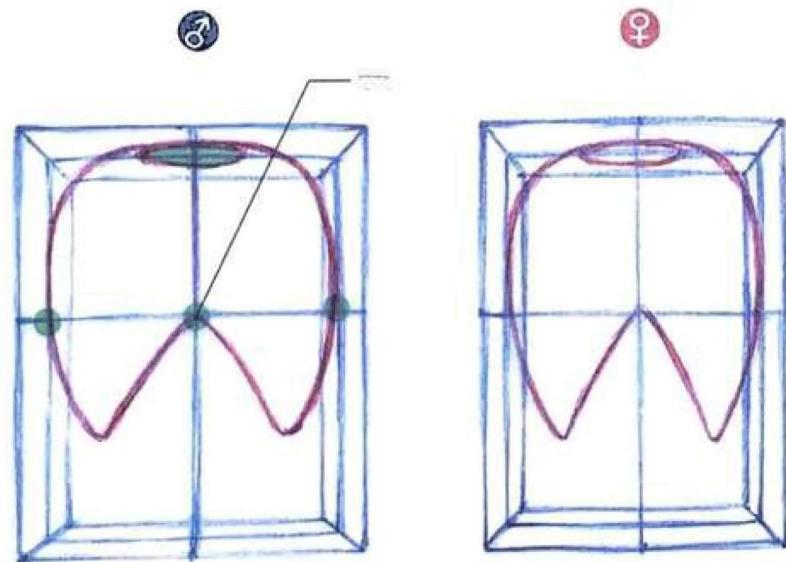
### Intuition



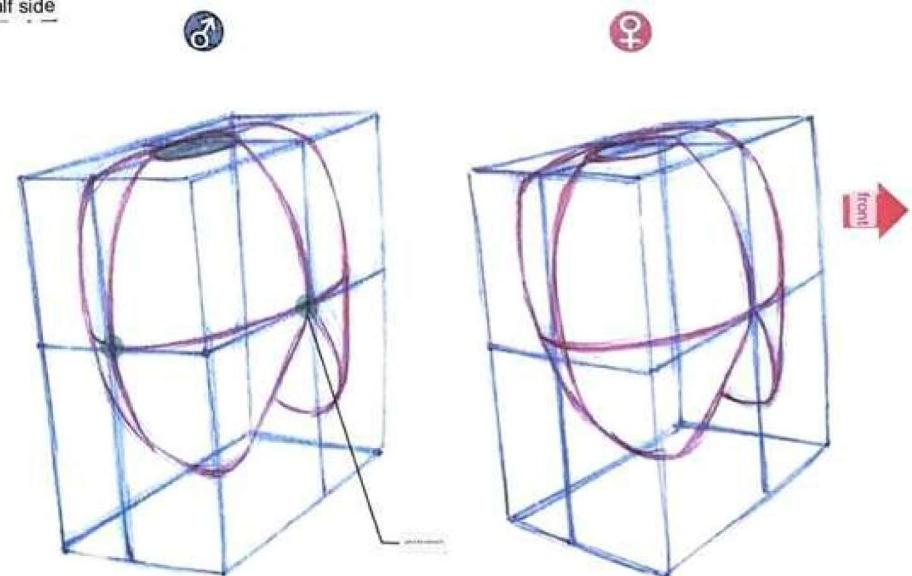
### ■ side



### ■ Front



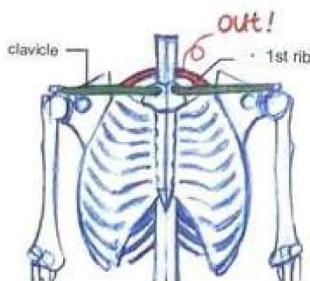
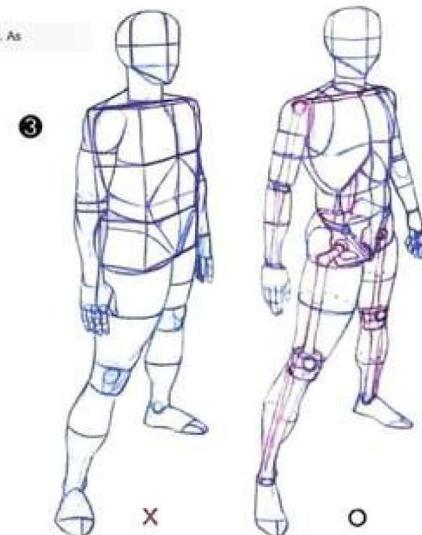
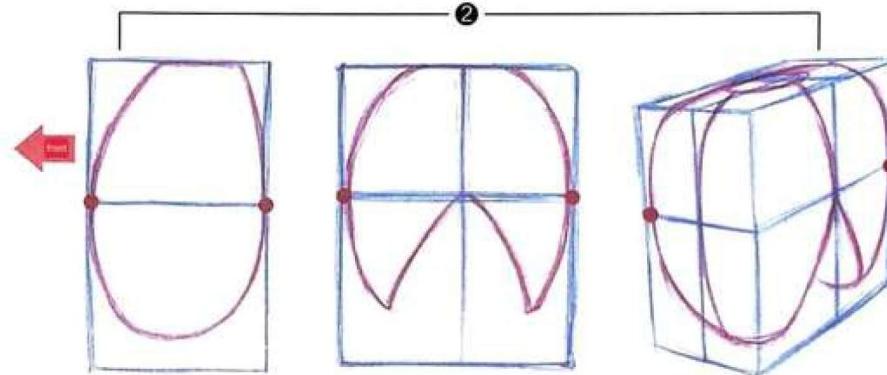
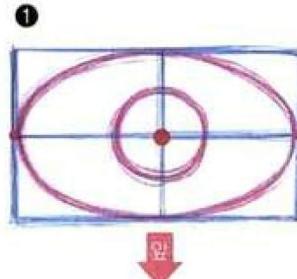
### ■ half side



## Incorrect answer note chest shape



Figure 1 is the wrong picture because the position of the neck is in the center of the box. The position of the neck should be closer to the back. The point where the sides of the chest cage touch the box should also be slightly tilted back. As shown in Figure 2, if you fill the chest cage according to the outline of the box, the body will become fat like the picture of the wrong answer in Number 2.

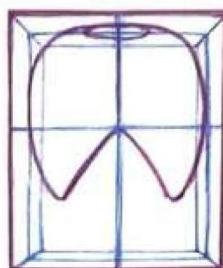


## shape of chest

The shape of the thoracic cage is the shape except for the part where the 1st rib rises above the collarbone.

The upper part of the ribs is covered by the trapezius muscle, so it does not affect the outline of the human body, and the clavicle was omitted to use it as the basis for creating the upper surface of the box. The actual ribs get narrower as they go up.

Therefore, the actual ribs and the schematic ribs are not exactly the same shape.



## the depth of the box

In order to accurately draw the volume of the chest cage inside the body box, you must not think of the box as flat. You have to understand in three dimensions that the elliptical breast cage is contained in the hexahedral box.

Consider the hidden faces to create a three-dimensional box with a sense of depth.



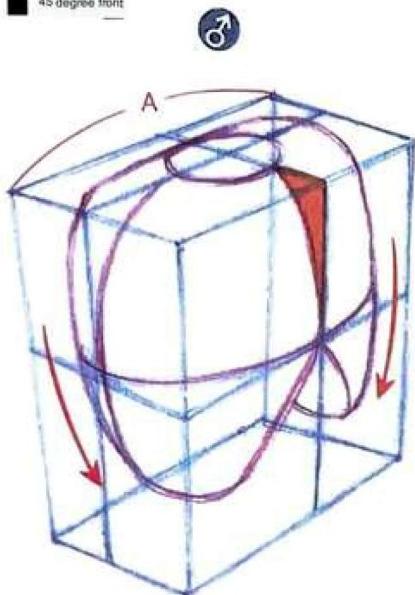
Does it look  
like teeth?

It includes the ribs,  
sternum, and thoracic vertebrae,  
called the 'thoracic cage'.

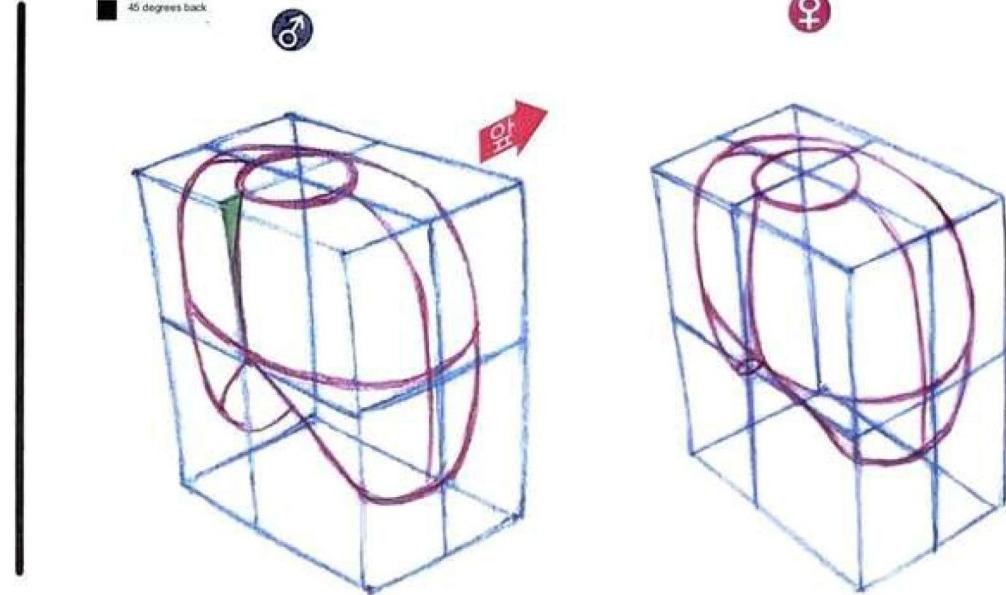


Somehow, these  
days my body  
keeps getting thicker...

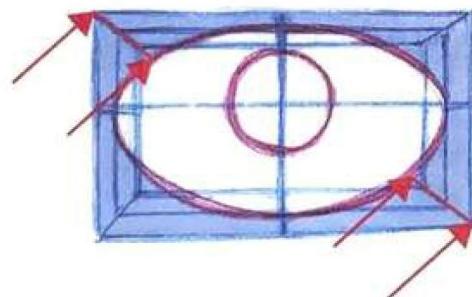
■ 45 degree front



■ 45 degrees back

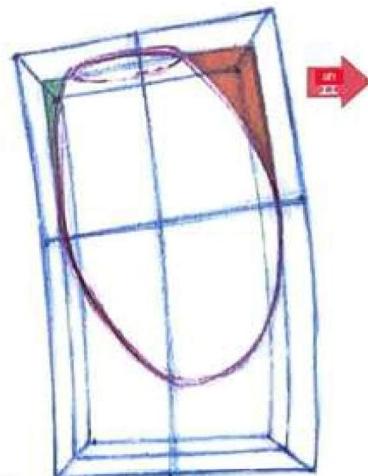


The side width of the male box is wider than the side width of the female box, and the female's ribs are narrower than the male's towards the bottom.



Recognize empty space in corners

Since a circular object is placed inside the square box,  
the corner of the box is left empty. In the half-side view,  
the distance between the corner of the box and the ribs seems wider.



The difference between the front and back of the chest cage shape

Chest cage shape from a side angle

Observed, the anterior shape is curved and

The back shape is straight

you can see

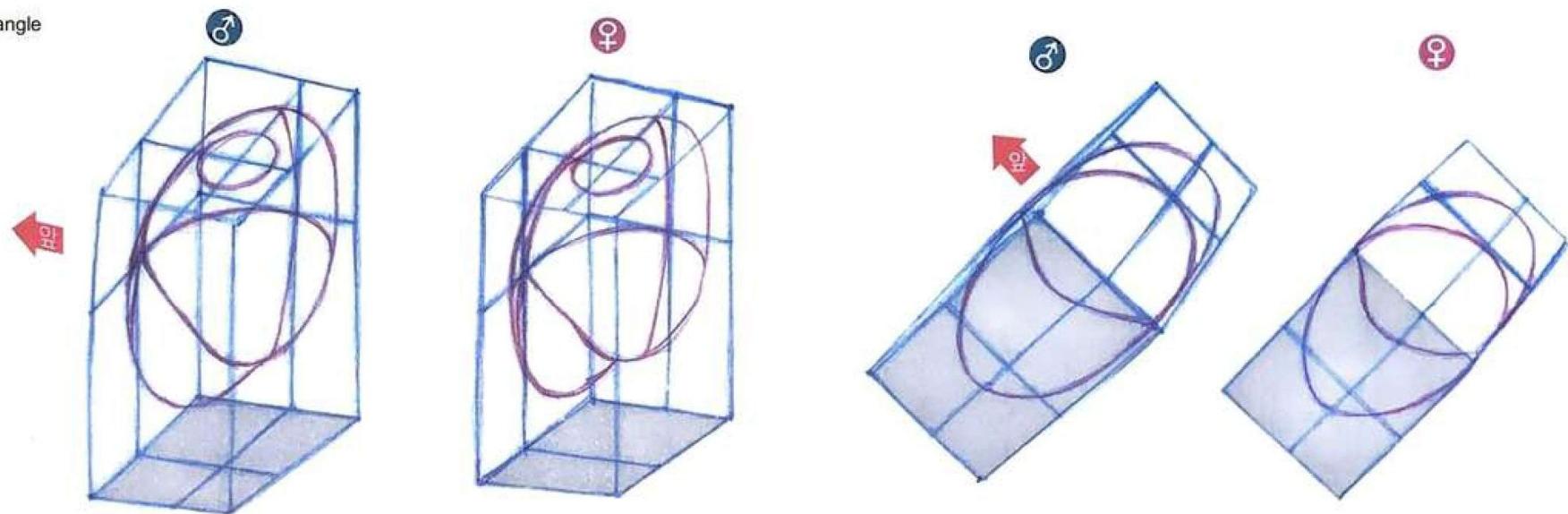
As a result, the front and back of the box

Is there a difference in the empty space

Please be careful!



## ■ Low angle

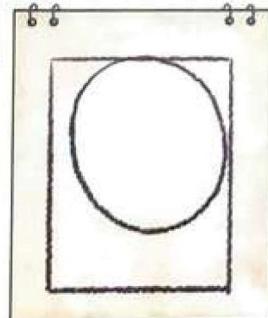
Advantages of holding the box throttle

If you frame it with a box, the angle of the box allows you to draw with a clear sense of what eye level and which direction the ribs of the ellipse are facing. Also, when drawing the hidden neck or the shoulder joint on the opposite side, you can see through the box and set the exact position.

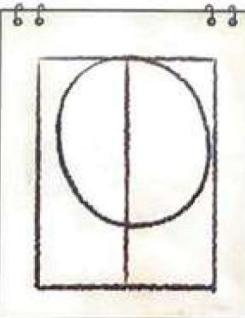
Incorrect answer note The order of drawing the chest cage (ribcage)



wrong order



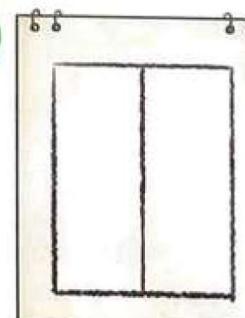
• Draw a chest cage inside the box.



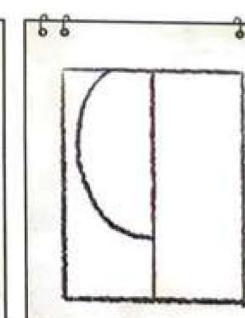
• Draw the center line of the 2 boxes.



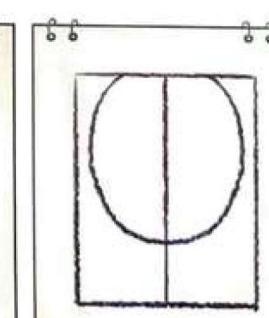
correct order



① Draw the center line of the box.

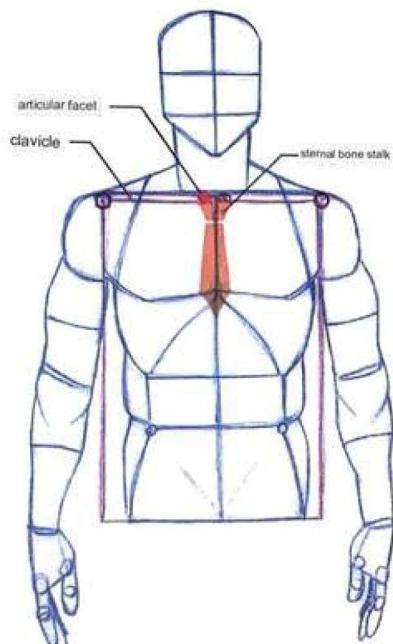


② Draw a chest cage on one side.

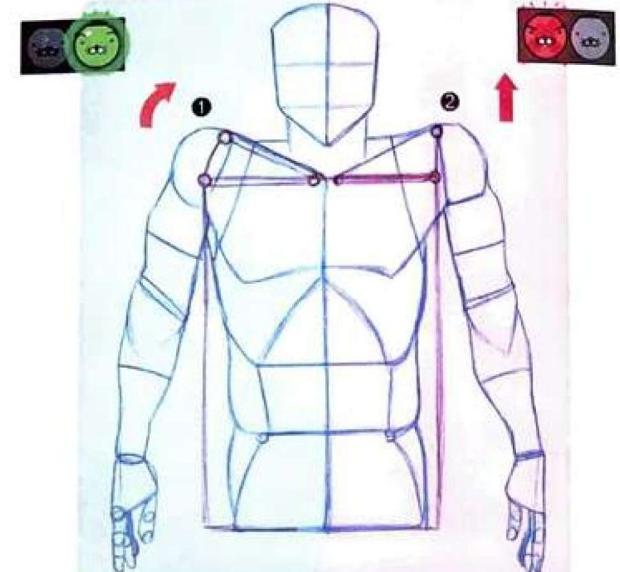


③ Draw the opposite side according to symmetry.

## |5 Clavicle (bone) that moves along the shoulder

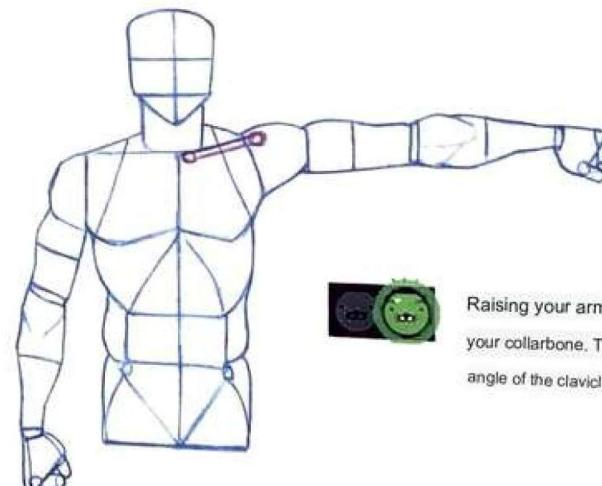
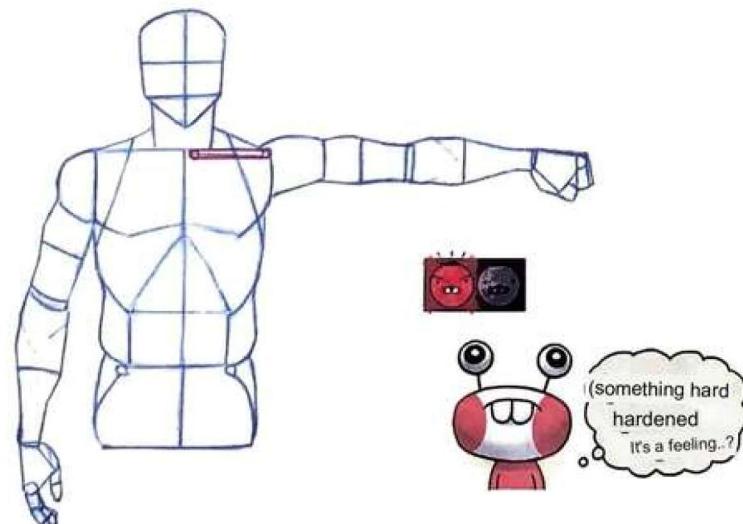


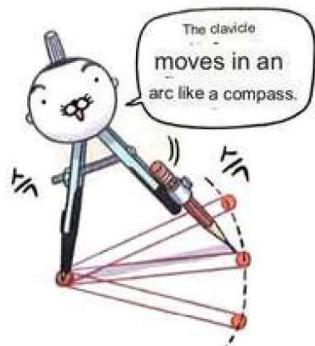
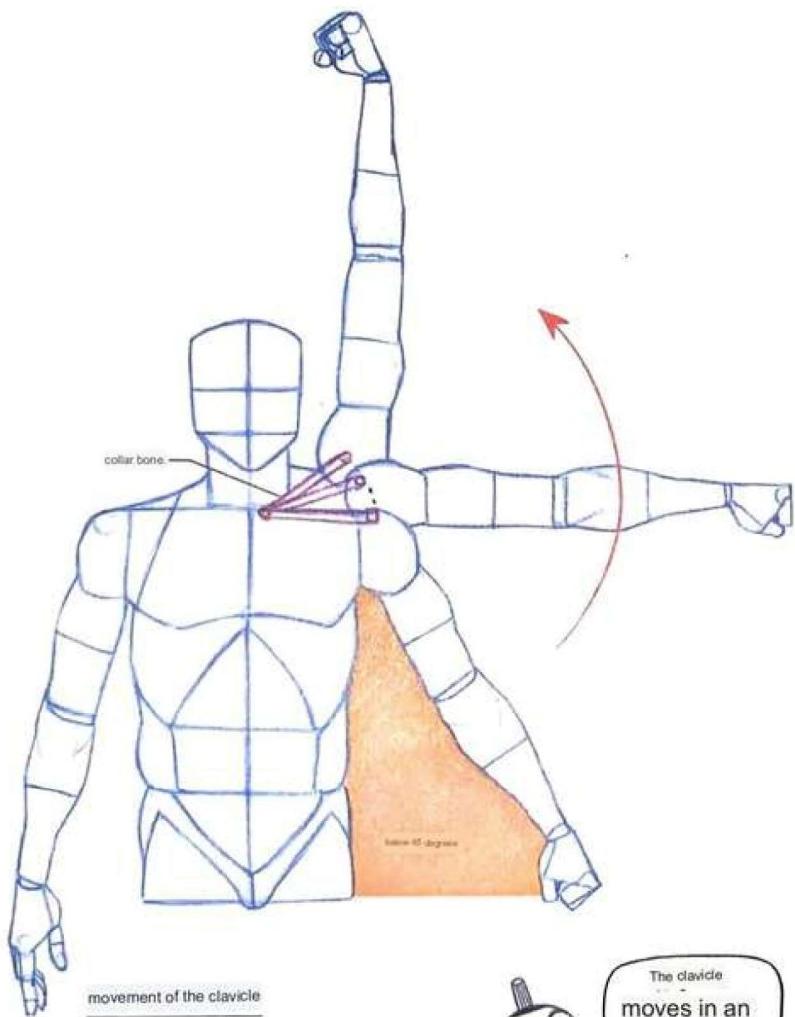
### Movement of the collarbone when lifting the shoulder



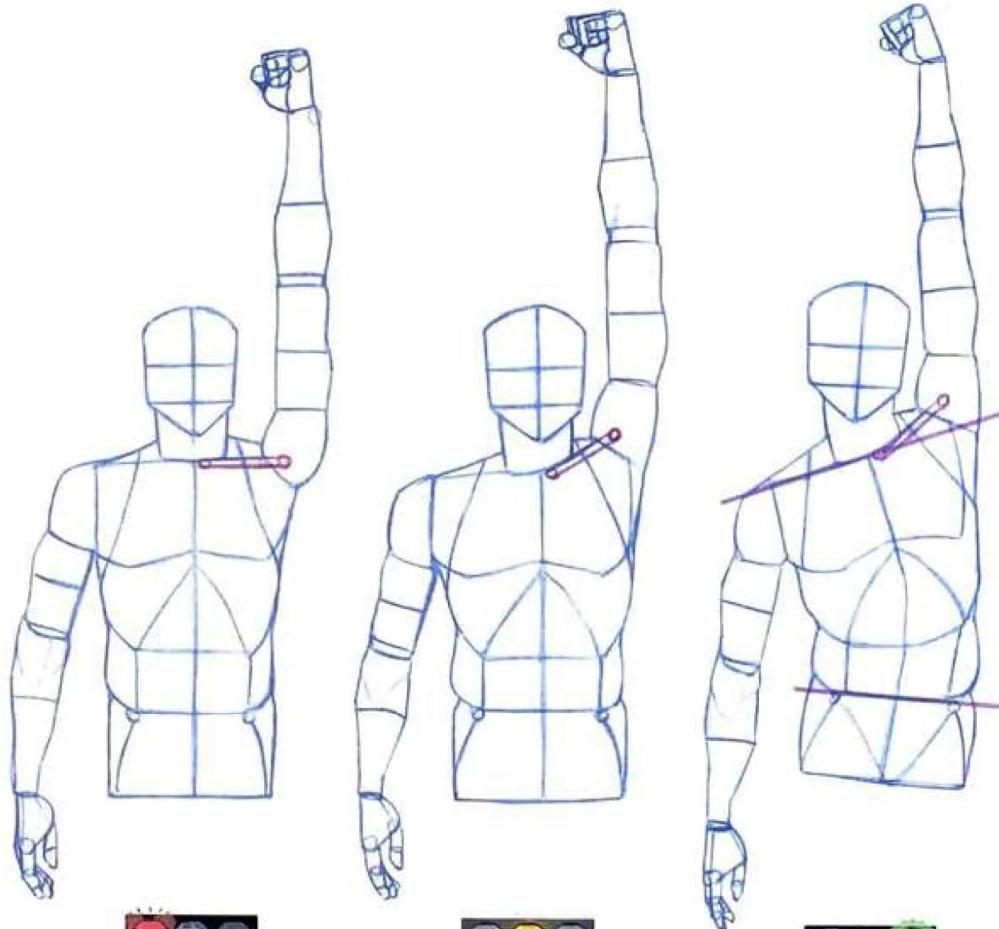
If you shrug your shoulders and lift them up, your shoulders rise in a parabola like number 1. The shoulders do not go up in a straight line like number 2. Since bones do not change length with movement, the clavicle changes angle only with respect to the sternum articular facet that connects to the sternum.

### Incorrect note Movement of the clavicle when the arm is raised





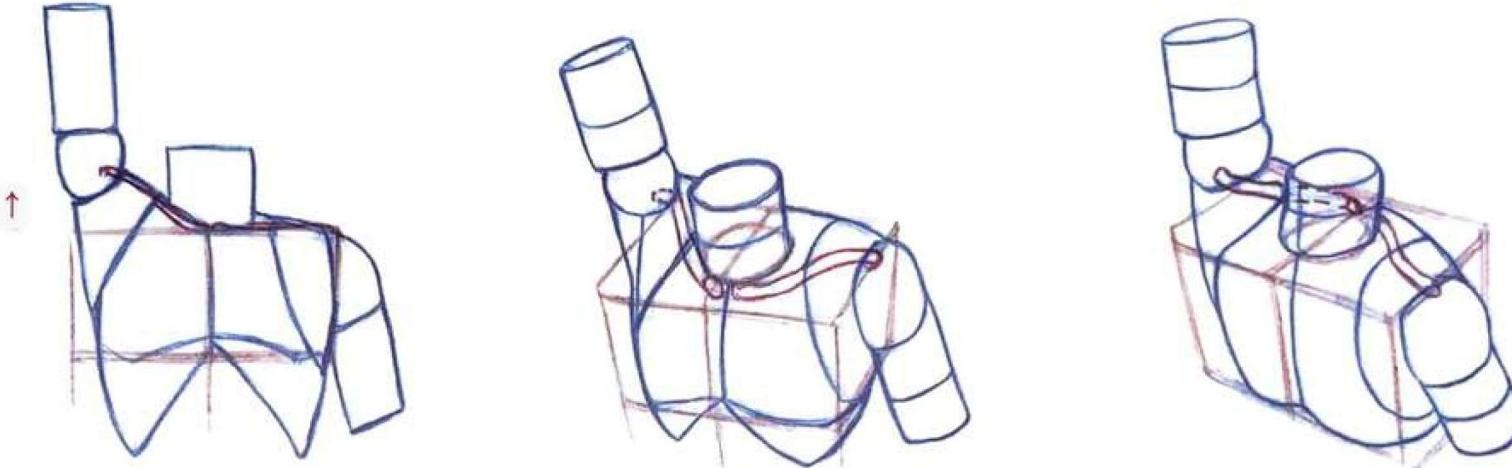
Incorrect answer note The most natural movement with arms raised



When the arm is raised, the clavicle is fixed and only the shoulder moves, making it look like a toy. It's the most common mistake.

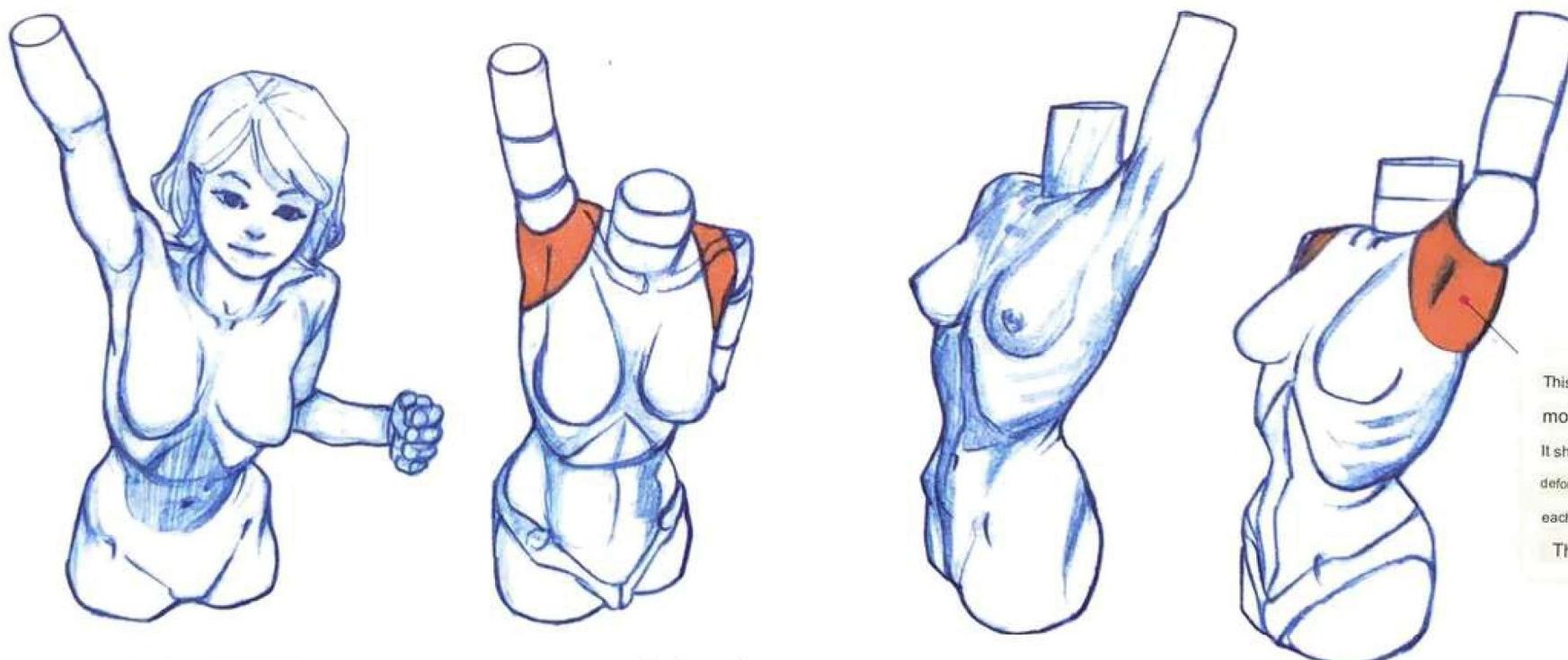
If the torso does not move when the arms are raised, the overall flow of the human body becomes unnatural.

When the arm is raised, the tilt of the shoulder and the tilt of the pelvis alternate with each other, creating a natural movement.



View of the clavicle when the arm is raised at different angles

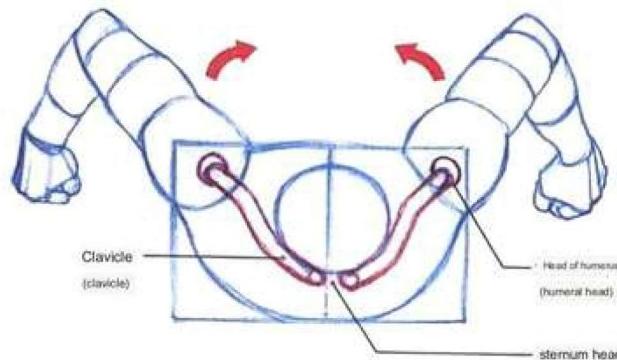
When you raise your arm, you can see the tip of the clavicle roll over the back.



This area of the figure is movement, not joints  
It shows the part where the deformation is severe.  
each arm position

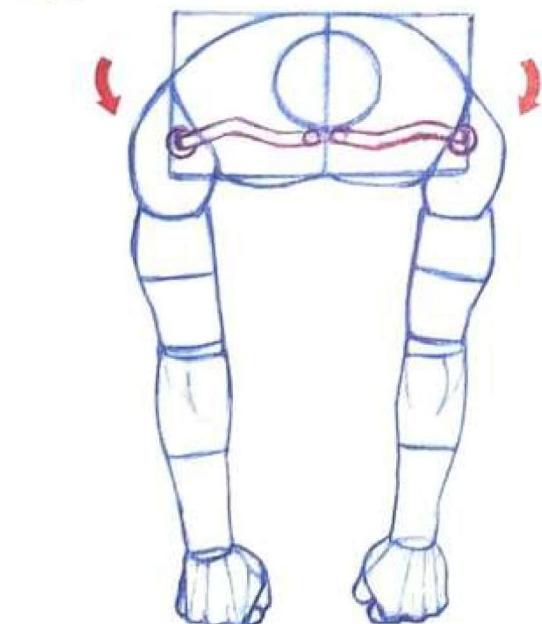
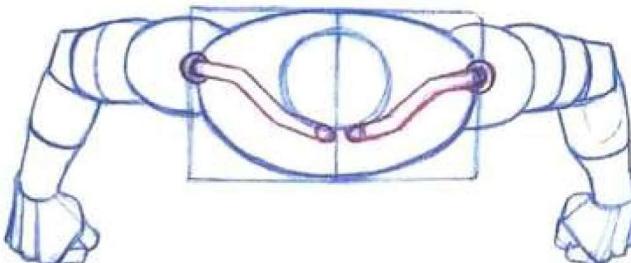
This area will vary.

Observe how you can express the shape of your real arm with figures!



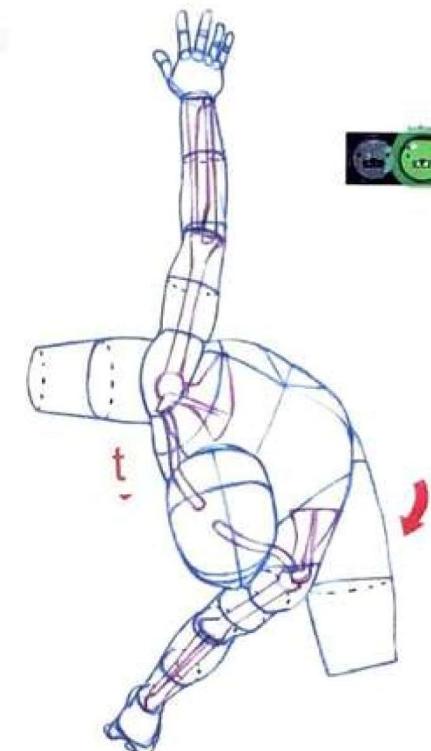
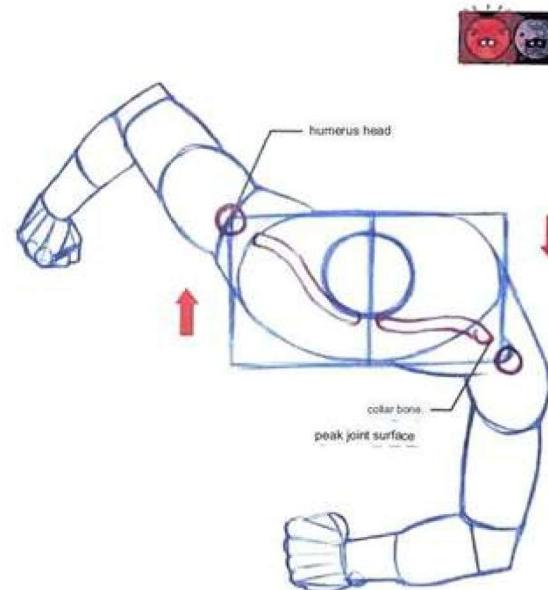
When you move your arms back and forth, your collarbone moves accordingly. The shoulder moves back and forth in a circular motion around the joint where the collarbone and sternum are connected. When the arms are brought back, the position of the head of the humerus goes inside the box, making the shoulders look narrow when viewed from the front. Conversely, if you extend your arms forward, your collarbones will be horizontal, widening your shoulders. Please refer to the information on the maximum range of motion that the arms can move back and forth through the pictures on the left!

The collarbone and shoulder always move together!

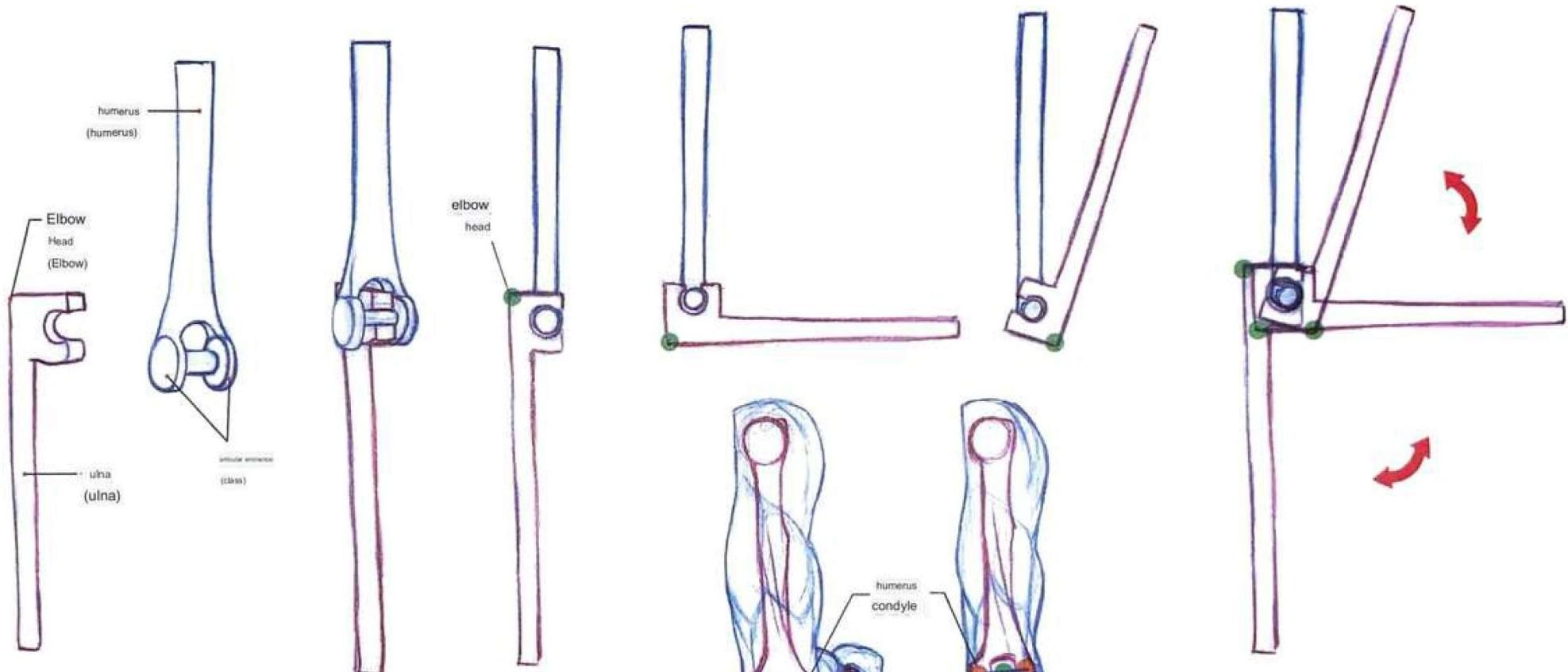


#### Incorrect note Movement of the shoulder joint

If you move the shoulder joint in a straight line along the side of the box, it will look dislocated. The head of the humerus must be positioned on the apical articular surface of the clavicle.



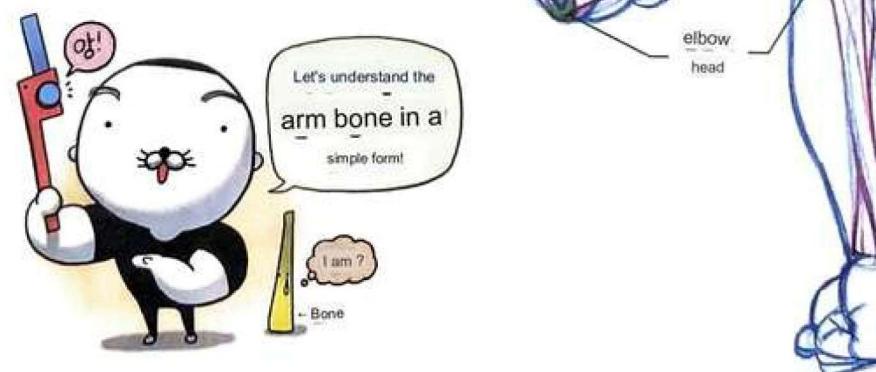
The skeleton that controls the movement of the 4 arms



#### shape of the arm joint

The elbow joint is shaped like a C.

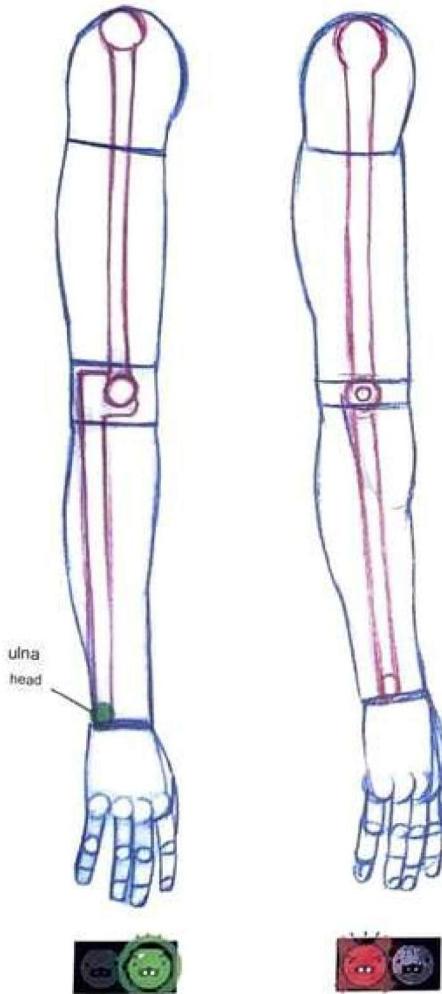
The ulna is shaped to bite the humerus bone. The forearm is made up of two parts, the ulna and the radius, but in figure drawing, only the ulna will be expressed.



#### flexion of the forearm

Moving the forearm up and down changes the position of the pointed elbow head. On the other hand, the articular eminence of the humerus is immovable. When the arm is bent, the joint elevations of the elbow head and humerus are in a triangular position, and when the arm is extended, they are in a straight line.

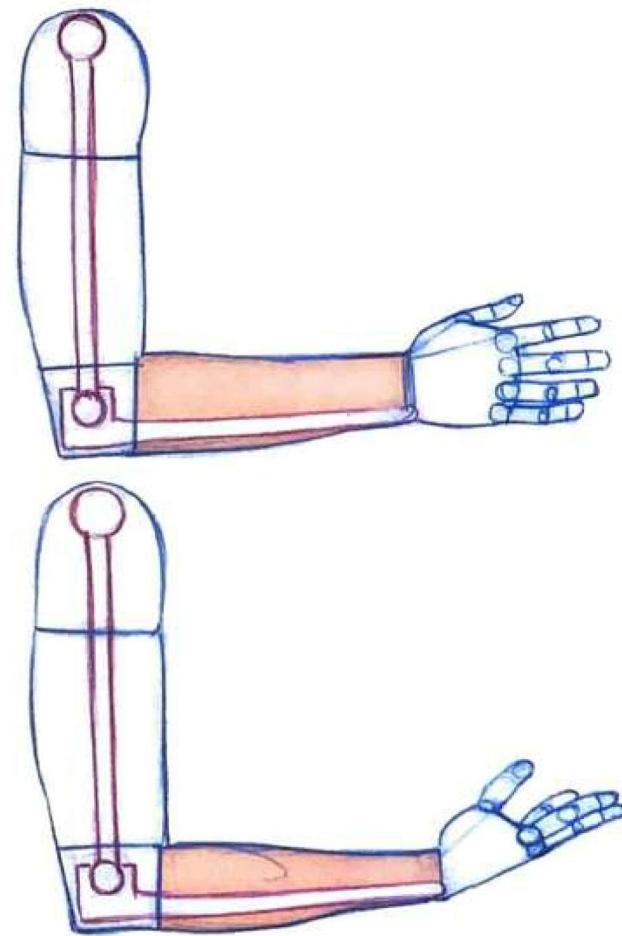
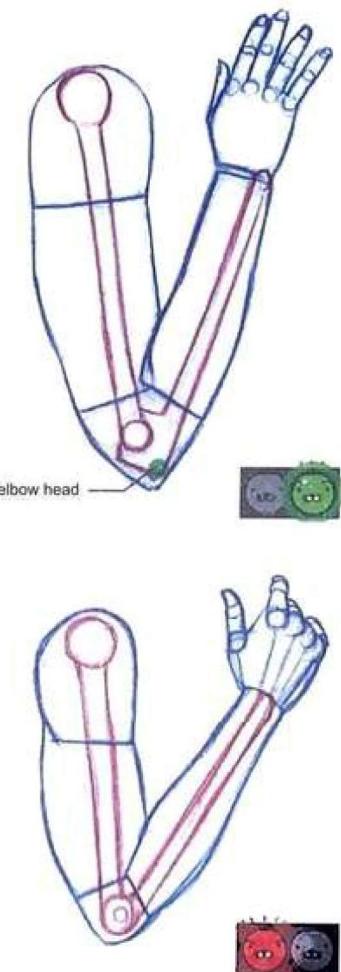
Incorrect answer note Elbow joint



Compare the difference in the shape of the elbow joint.

Also, the head of the ulna is located on the side of the little finger,  
not in the middle of the wrist.

Every time you move your arm, the position of the elbow head (head) changes, so there is a change in appearance. If the elbow joint is drawn in a circular shape, the position change of the elbow head is not expressed.

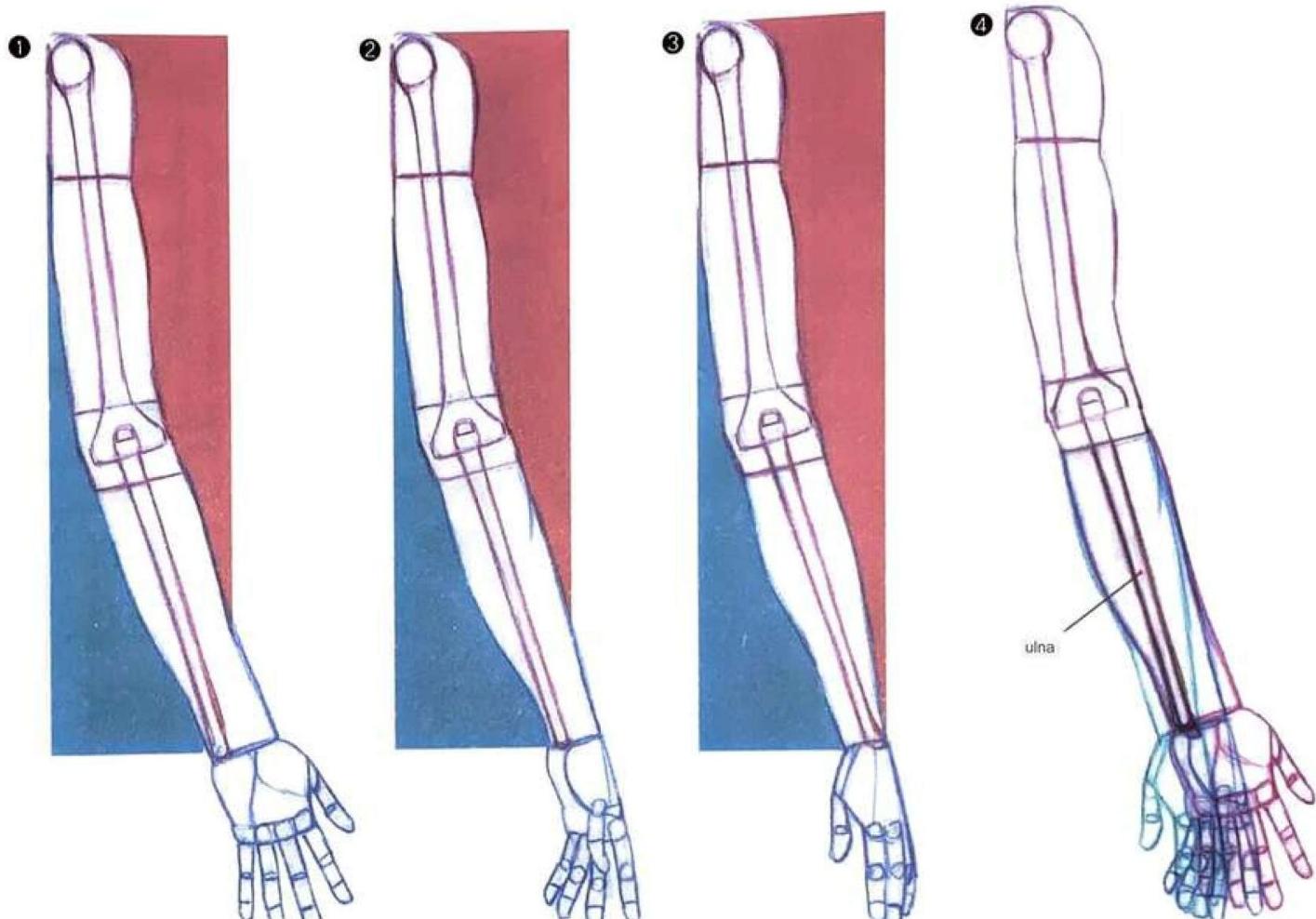
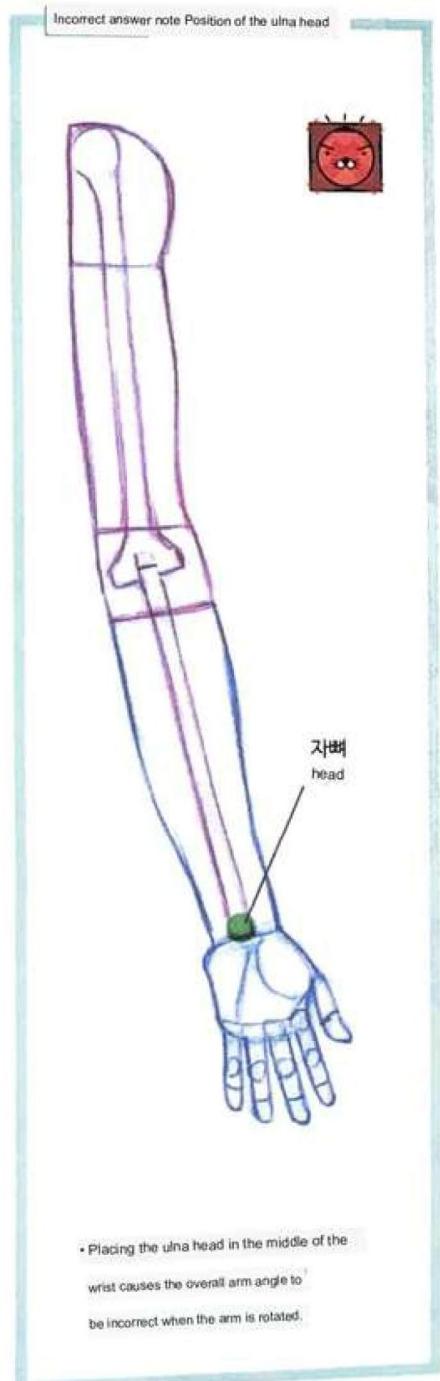


#### hand orientation and arm silhouette

The silhouette of the arm changes depending on the direction the palm is facing.

As the forearm bone rotates, the muscles attached to the bone twist or loosen, causing changes in shape.

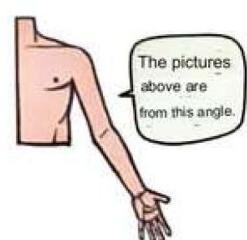
When drawing the arm, do not start with the upper arm and work your way down, but first determine the position and direction of the hand and then draw the flow of the arm.



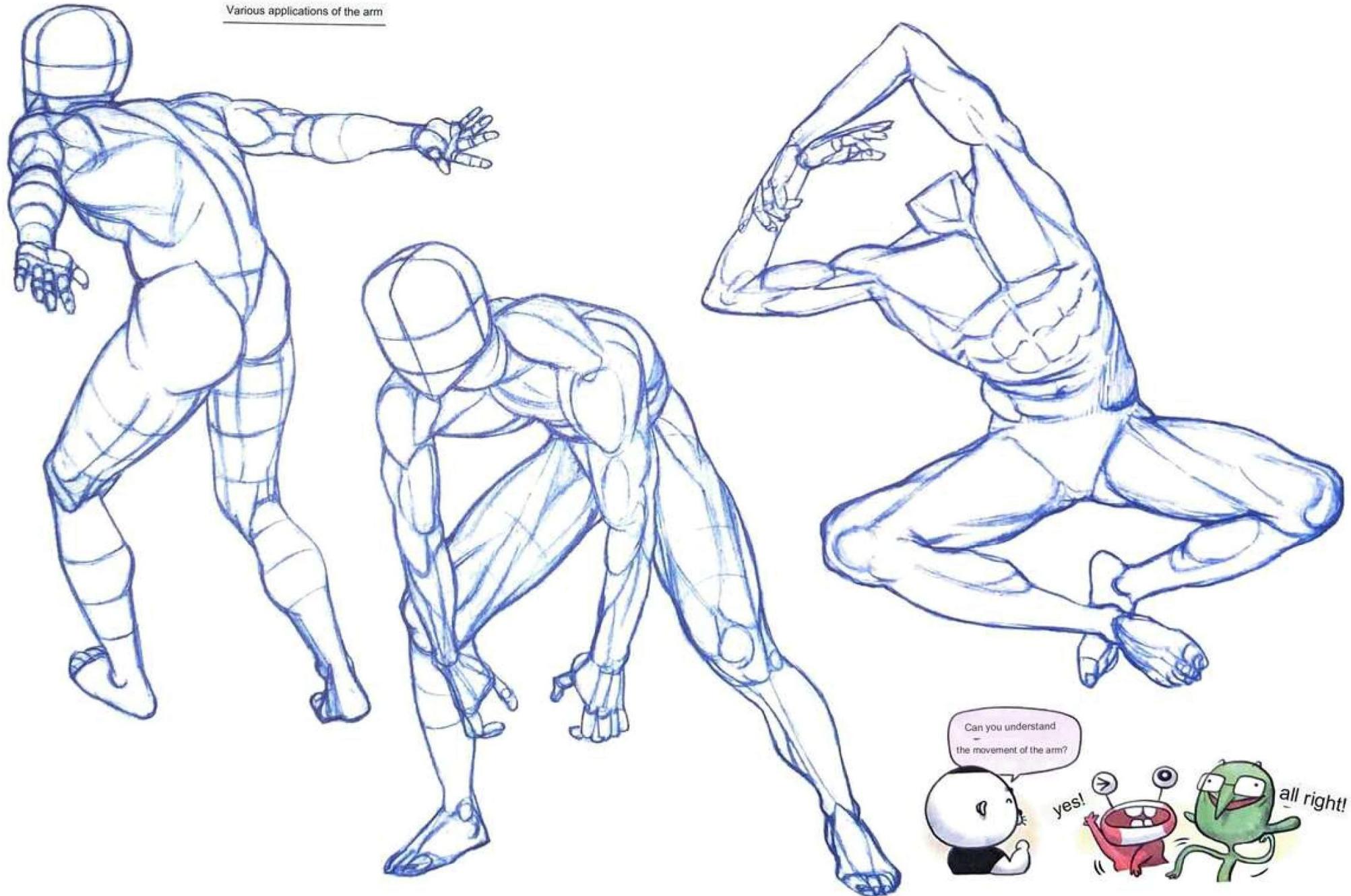
#### Arm Movement: Rotate

As in number 1, when the palm is facing the front, the angle at which the arm bends is the largest. If you place your arms so that the back of your hand is visible as in No. 4, you can see that the overall flow looks more straight than No. 2. If you look at number 4, which is a

① combination of numbers 12 and 2, you can observe the phenomenon that the ulna does not move when the hand is turned down, and the hand turns over with the ulna serving as the standard. The reason why the ulna is used as the standard for the skeleton of the figured arm is because the ulna is not affected by the movement of the hand.



Various applications of the arm

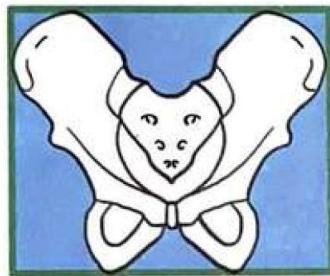


Can you understand  
the movement of the arm?

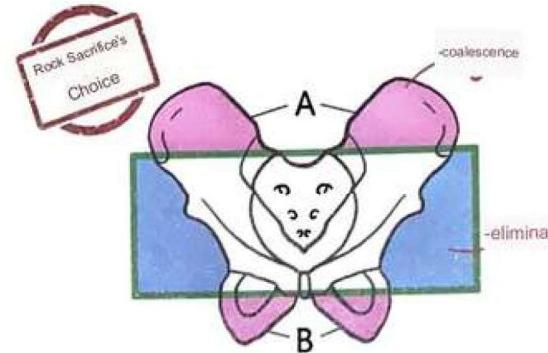


## | 5 Easy to understand complex pelvis

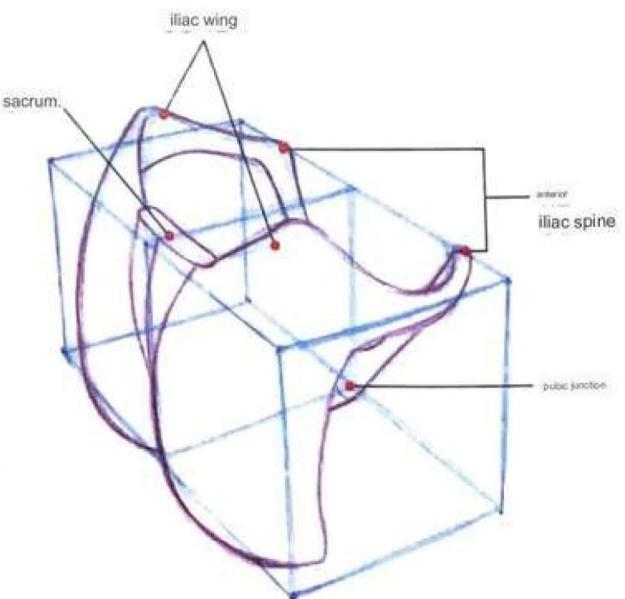
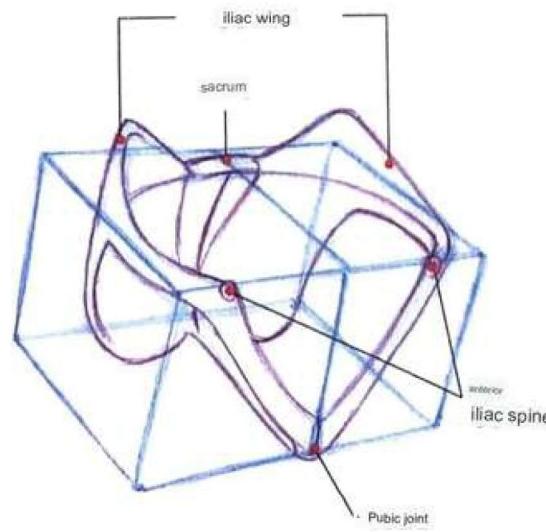
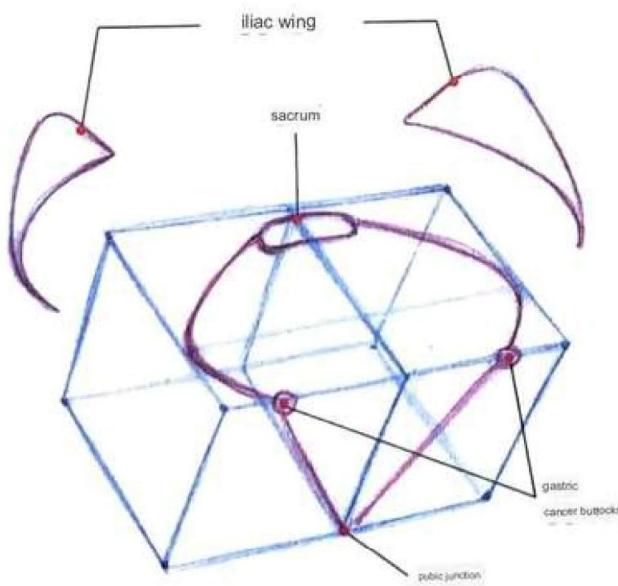
### Two ways to shape the pelvis

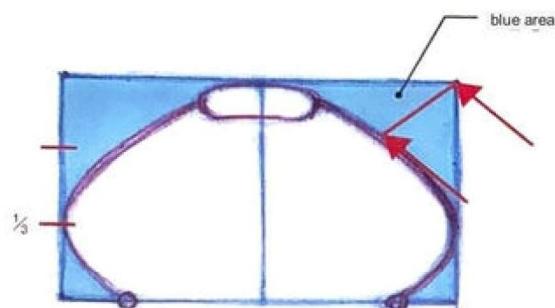


Method 1. Box the entire pelvis and carve it into detailed shapes.



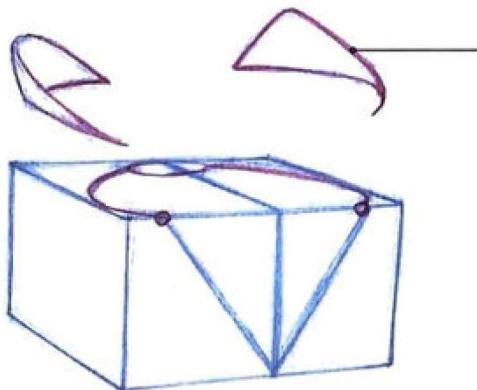
Method 2. After boxing the bulky area, add parts A and B. (I'll learn more about B later.)





The shape of the pelvis seen through intuition

The point where the sides of the pelvis touch the box is the point. The shape of the pelvis is not an ellipse like the ribs. It's more like a triangle.



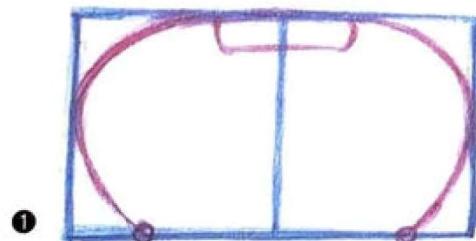
Create a pelvic deformity

The pelvis looks really complicated. The more difficult the form is, the simpler it is to understand.

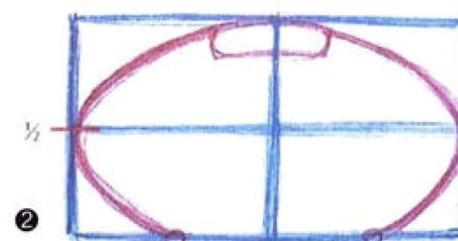
The shape of the pelvis is a form in which a triangular panty line is connected to the buttocks along the flow of the iliac wing. The blue area in the picture on the far left is the space that needs to be trimmed, so make sure the pelvis doesn't touch the side edge of the box at the half-side angle.

Incorrect answer note

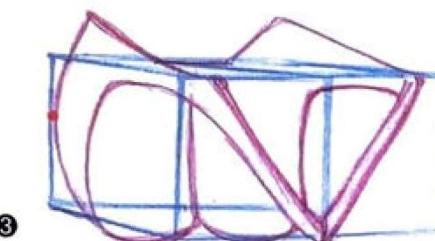
pelvic deformity



①



②

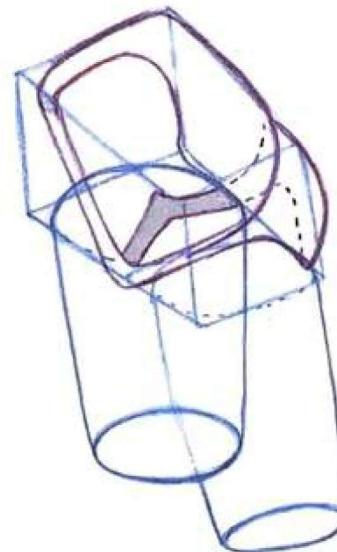
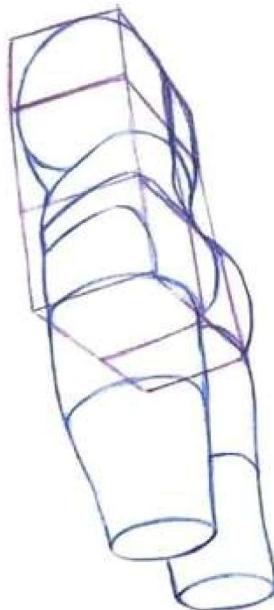
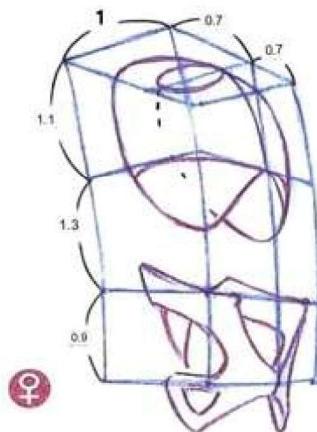
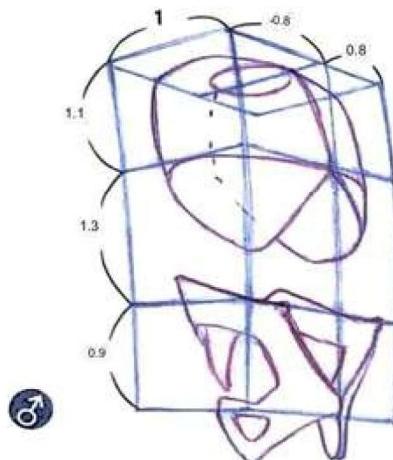


③



Do not widen the pelvis to fill the box as in ①, or do not place the point where it meets the box at the  $\frac{1}{2}$  position as in ②. ③ Contrary to these precautions, it is a picture of the wrong shape drawn so that the pelvis touches the edge of the side of the box. If you draw like this, of course your butt will get bigger, right?

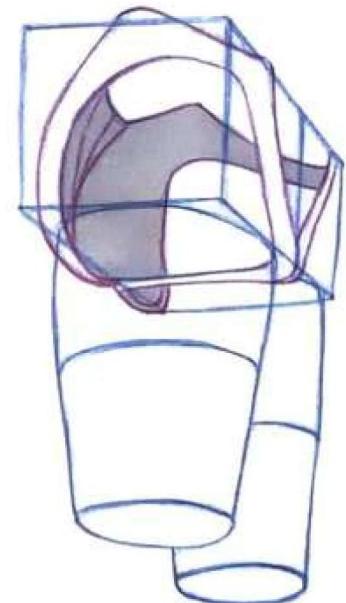
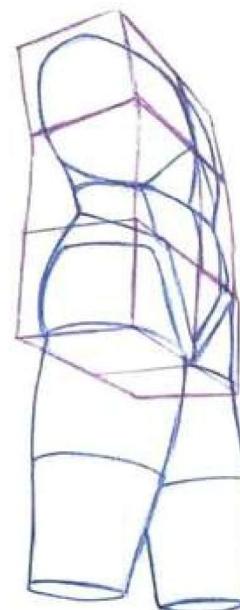
| 3 Meeting of the chest cage (thorax) and the pelvis



**Q&A**

How do you measure the proportions of the torso box?

Please refer to the proportion through the box organized on the left. Women have a slightly shorter frontal width than men. You can learn the sense of proportion of the torso box by repeatedly making a box by connecting the points you learned when measuring human body proportions while looking at pictures of actual models.



It is very important to understand and draw even the invisible parts three-dimensionally, and practice holding the pelvis point in the correct position.

Figure 2

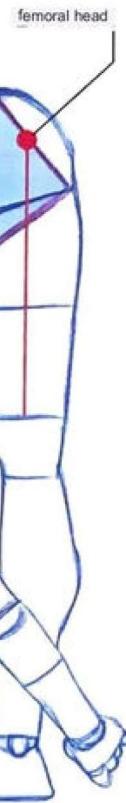
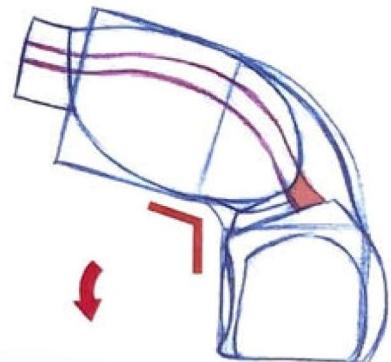
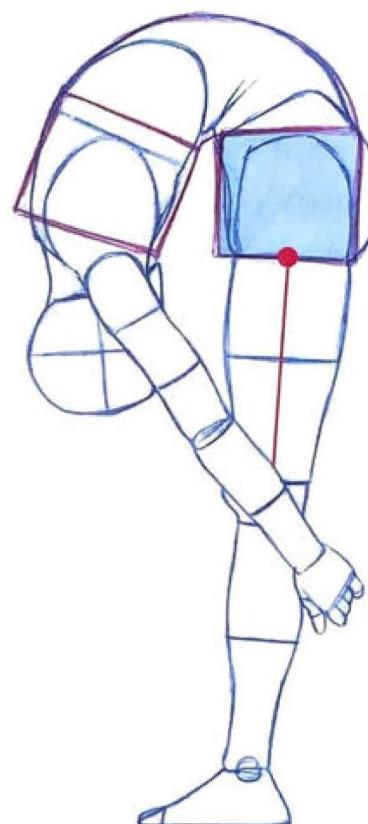


Figure 1

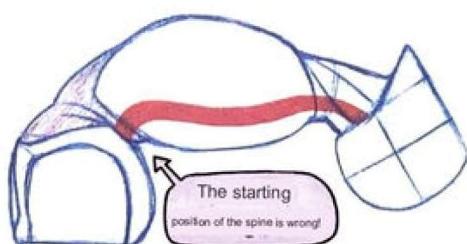
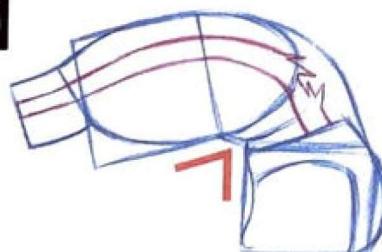
X



movement of the waist

Bending forward at the waist puts pressure on the organs. So the angle of forward curvature of the spine is not great. The spine, on the other hand, leans back more. The point where the spine curves is the lumbar vertebrae shaded in the picture above. The visible part of the waist is the spinous process, so you shouldn't think of the spine as being in the back. The vertebral body, which is the center of movement, is located deeper in the body than you think.

Incorrect answer note waist movement



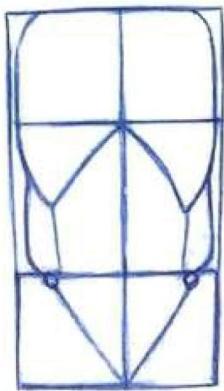
The waist doesn't bend that much. Choosing the wrong key location for the curvature of the spine will paint a picture of a broken back like this. Compare with the correct answer picture above!

The relationship between the lower back and the femur

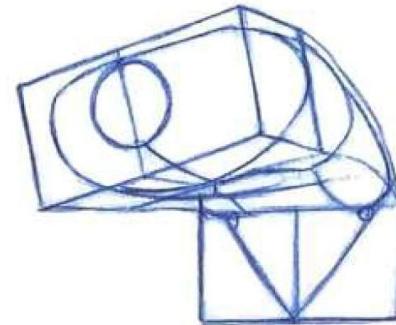
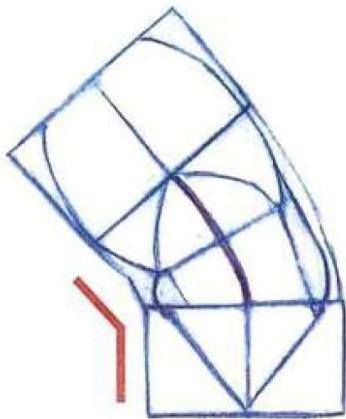
The reason why the body can be folded like a folder is not because the spine is bent as in Figure 1, but because the pelvis is tilted because the hip joint, which is the axis of the femur head, moves as shown in Figure 2.



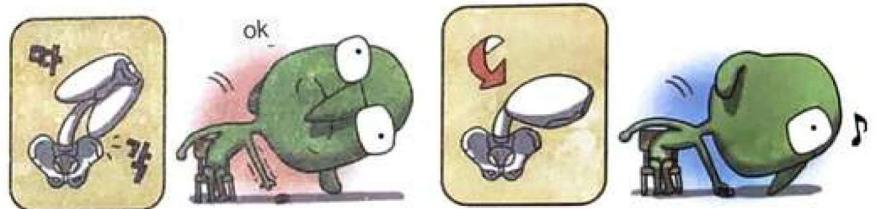
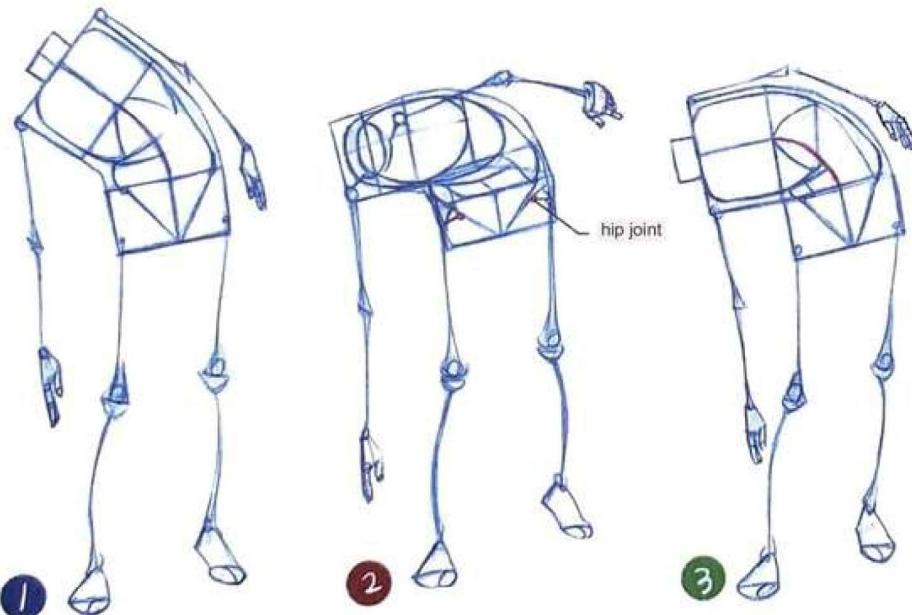
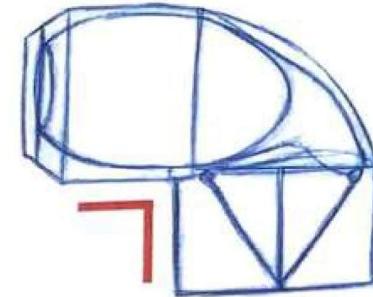
## posture of bending



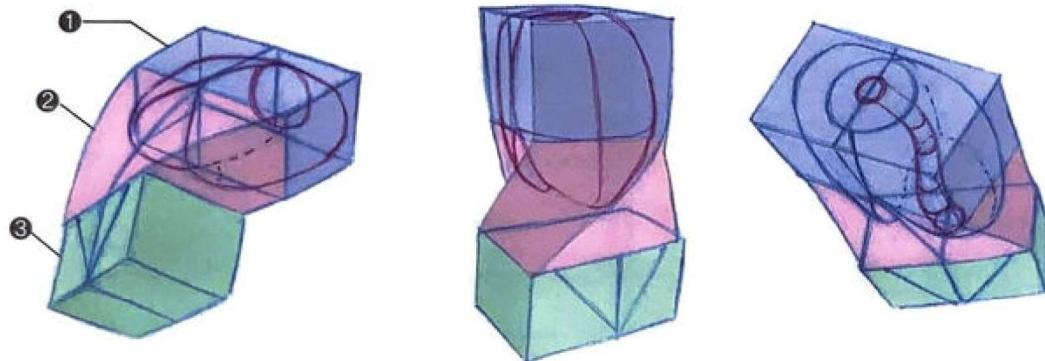
If you bend your waist to the side with your upper body facing the front, the lower part of the ribs and the pelvic bones engage each other, preventing the lower back from bending too much.



When the upper body is twisted, the cracked grooves of the ribs are directed toward the pelvic bones, creating space. This will allow you to bend your lower back more.

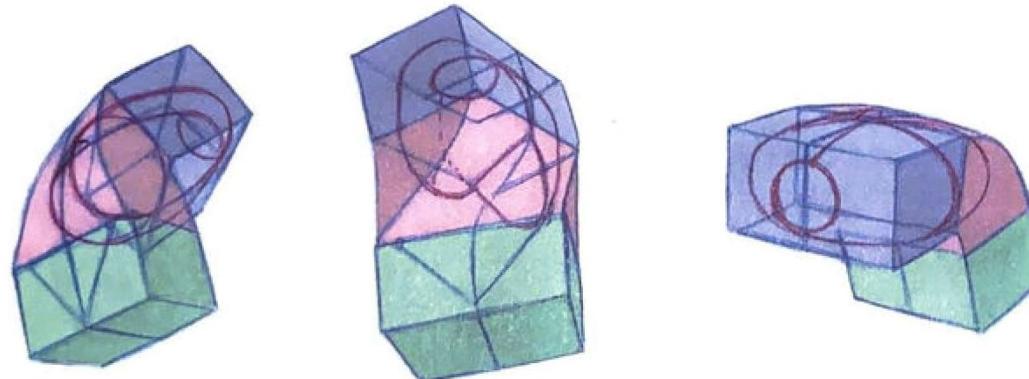


- 1 When I try to pick up something that has fallen on the floor, my ribs and pelvis come into contact with each other, limiting my movement, so I can't bend my upper body much.
- 2 As mentioned on the previous page, when leaning forward, the hip joint between the pelvis and femur moves rather than the lower back, and this is the most natural posture for picking up objects from the floor.
- 3 If the movement of the waist bending sideways is expressed excessively as shown in the picture, the ribs will damage the organs, right? It's actually an impossible position.

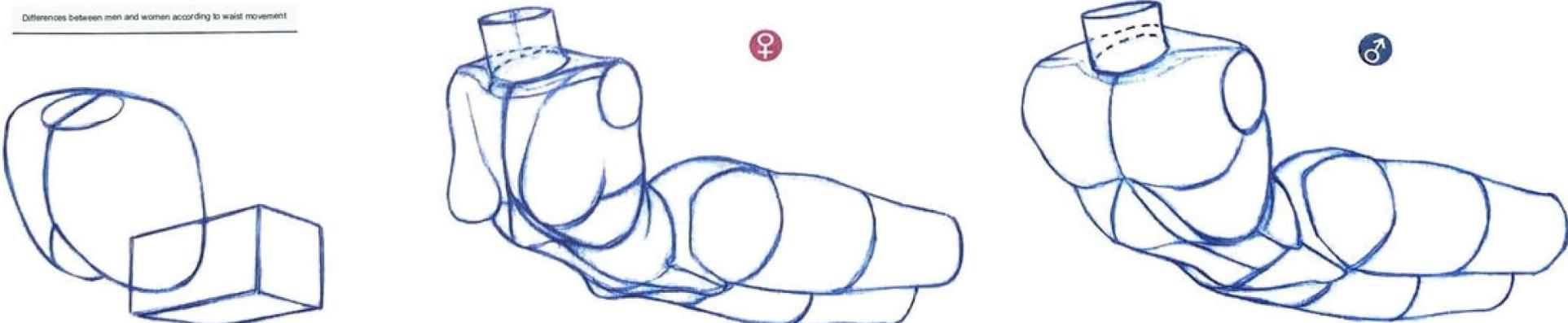
movement of the box

Box 1 may change slightly depending on the movement. Box 2 is flexible in shape, such as bending and twisting. It is drawn curvilinearly according to the flow of movement.

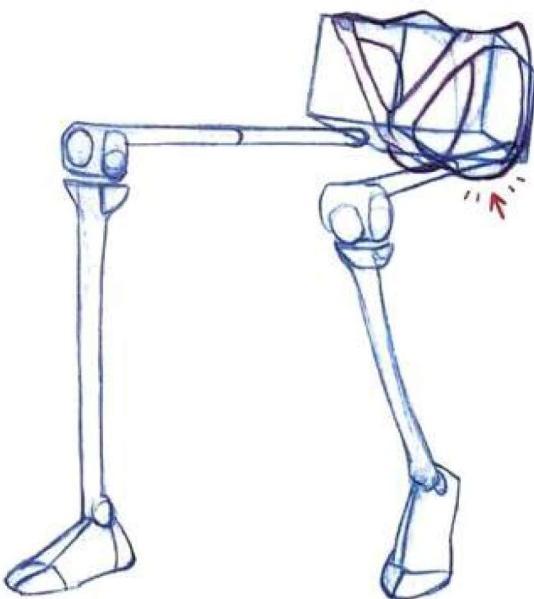
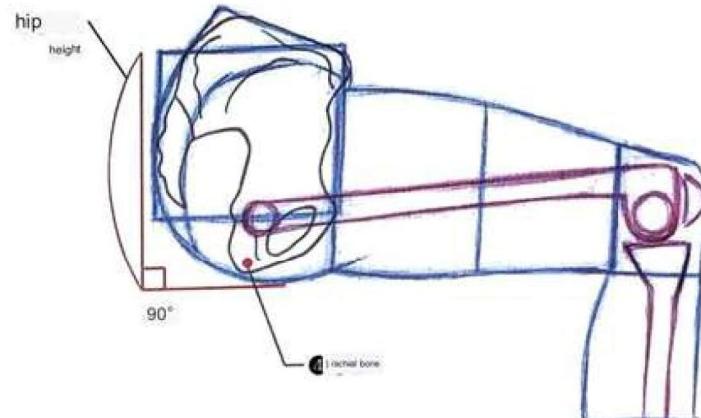
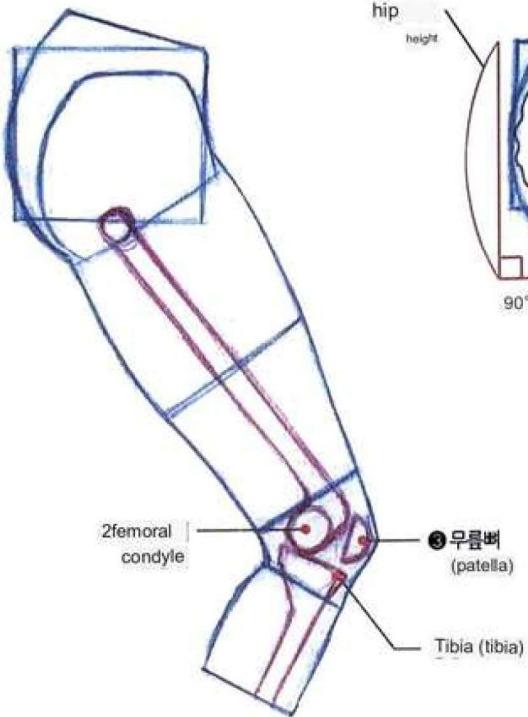
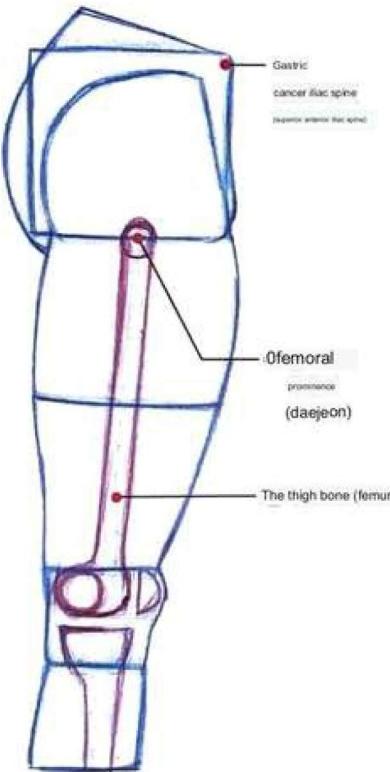
Box 3 has no deformation at all.

Deformation of the box

Box 2 (waist) > Box 1 (chest) > Box 2 (pelvis)

Differences between men and women according to waist movement

## 2 points of leg movement



① When you move your thighs back and forth, the femur moves around the greater process of the femur.

② The joint prominence of the femoral bone refers to the part that protrudes from the back of the knee,

and the shinbone moves along this joint prominence when the knee is bent.

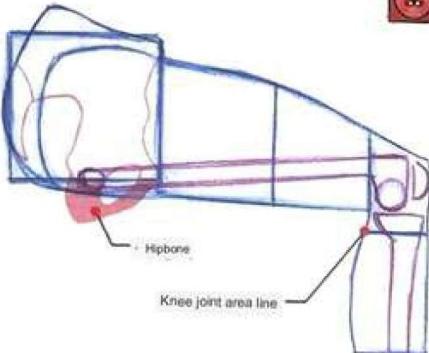
- The patella moves along the shinbone and has a great influence on the external shape when the knee is operated.

③ The ischium becomes an indicator of the height of the hip when the pelvis and femur are at 90 degrees.

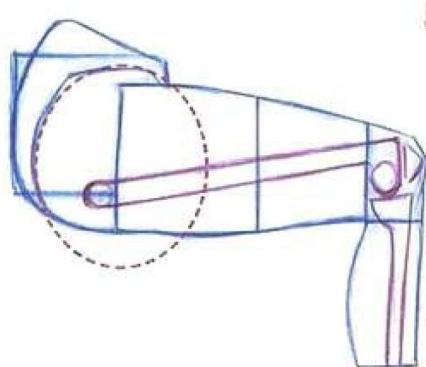
An asterisk is important!



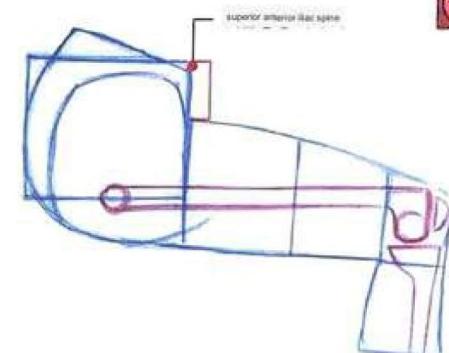
## leg shape



In a sitting position, the ischium supports the buttocks, so the part where the buttocks are located shouldn't be drawn flat. Also, your thighs should come down to the line marking the knee joint area.

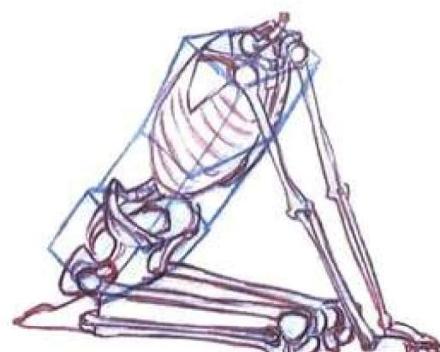


The thigh shape has dug into the area of the pelvis. The boundary line of the joint part changes position every time it moves. If the visible part is taken as the standard of proportion, the shape becomes unnatural when the shape moves. In order to be consistent in proportion, shapes should be drawn based on a skeleton whose length does not change.



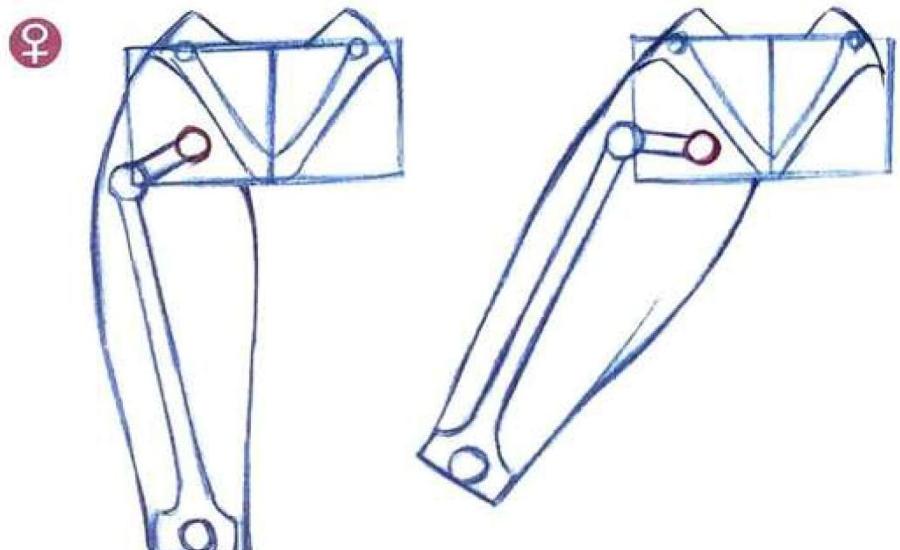
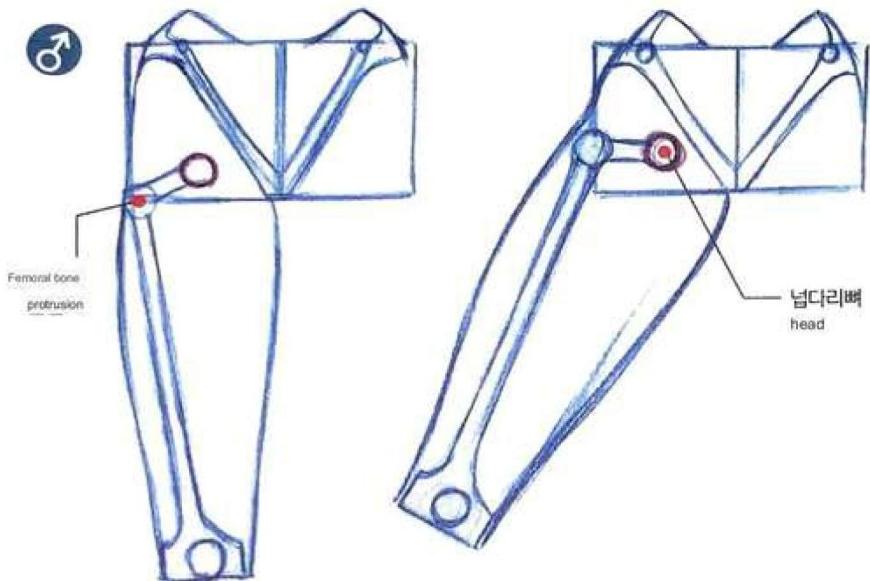
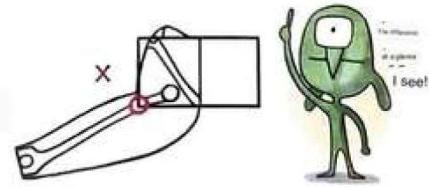
When you bend your legs, be careful not to set the distance between the anterior iliac spine and the beginning of the thigh too far.

## Application of bending the leg

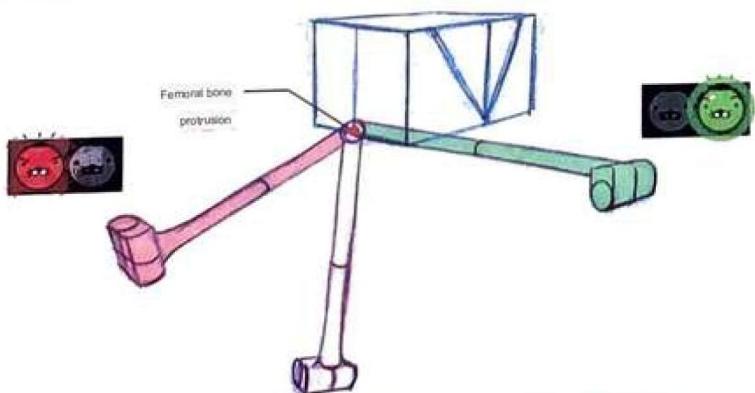


Thigh differences between men and women and movement of the femoral head

In men, there is not much fat above the femoral process, so the greater process of the femur is in close contact with the skin. In women, fat accumulates around the buttocks and thighs due to female hormones. So, unlike men, the femoral protuberance is covered with a layer of fat and is not prominent outwardly. When moving the thigh back and forth, the greater process of the femur is the standard, but as shown in the picture below, the head of the femur is drawn as the axis when moving the leg sideways.



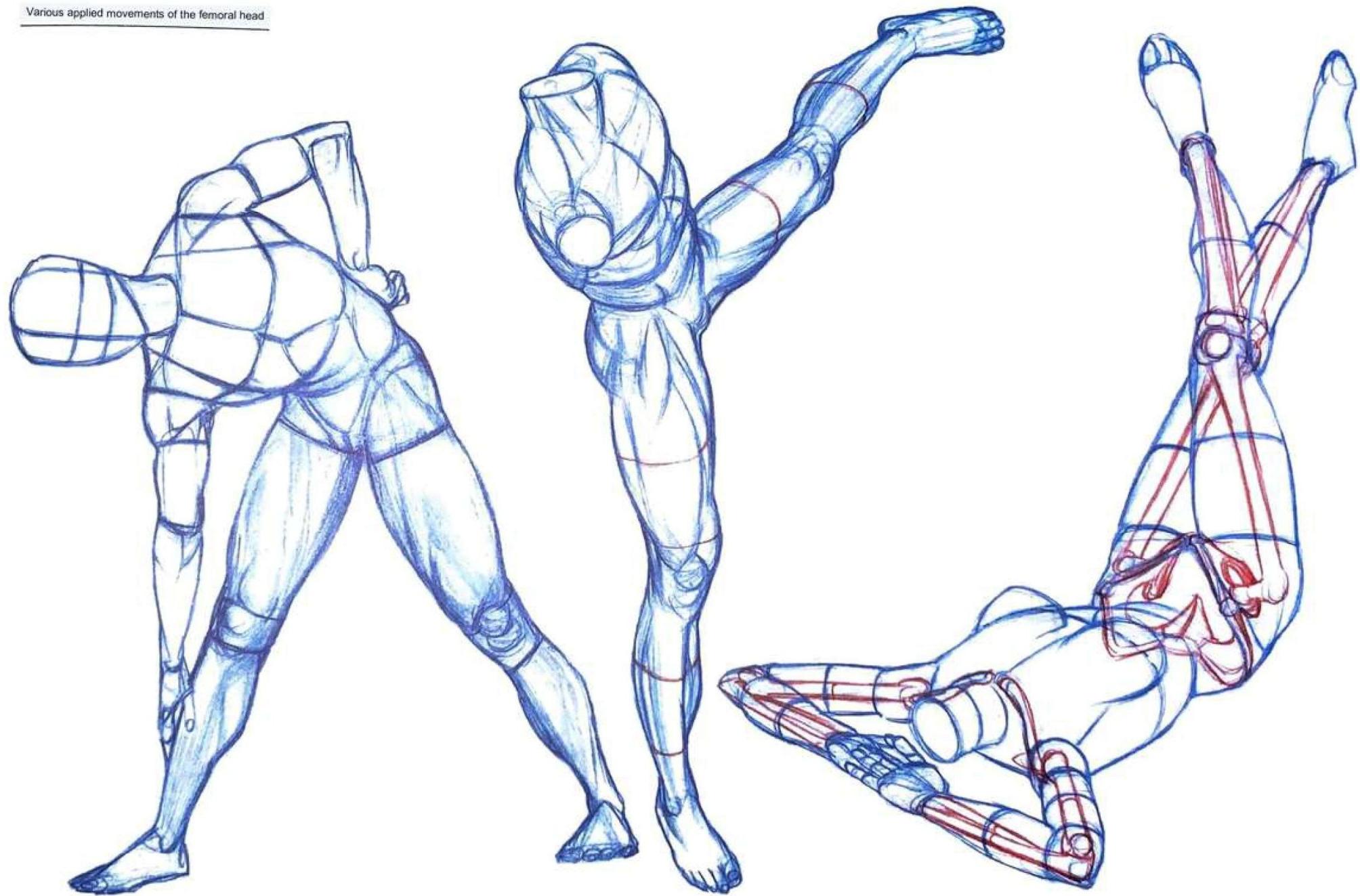
Incorrect answer note Femoral head and greater process of the femur



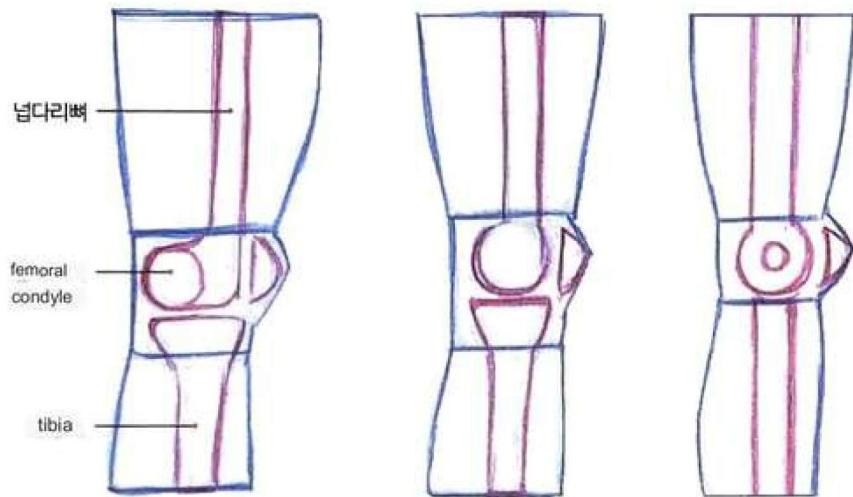
If you don't know exactly the shape of the joint that is the axis of movement, the shape when you move will be wrong. The joint where the femur meets the pelvis is bent in the shape of a golf club. So you can't think of it as a straight line like the humerus we learned earlier. When you move your leg sideways, it is important to recognize the position because you move the femoral head as an axis.

As shown in the green femoral bone picture on the left, when moving the leg back and forth It is not wrong even if the large protrusion is the center, but an error occurs when the legs are spread to the sides as shown in the red femur bone picture, how is it. How easy is it?





Incorrect answer note The shape of the knee joint



If you look at the knee from the side, the joint lengthens backwards like a golf club. The part where the bone protrudes like this is called 'articular eminence'.



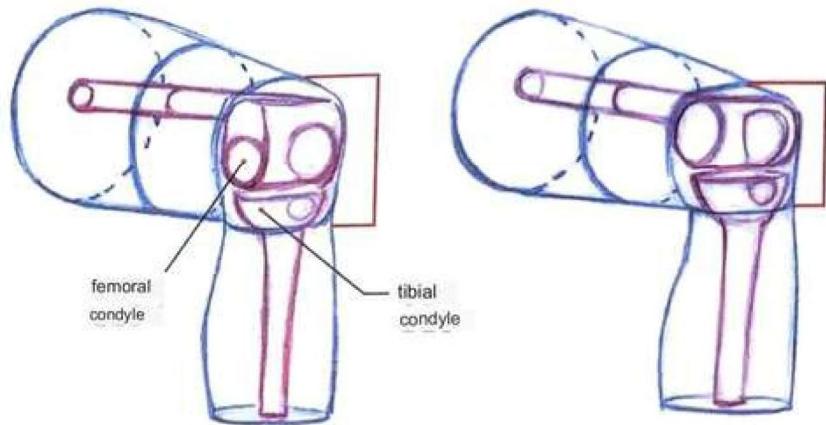
If you draw the joint prominence of the femur as a round joint rather than a golf club shape, the knee is expressed terribly when viewed from the side, giving a poor impression.



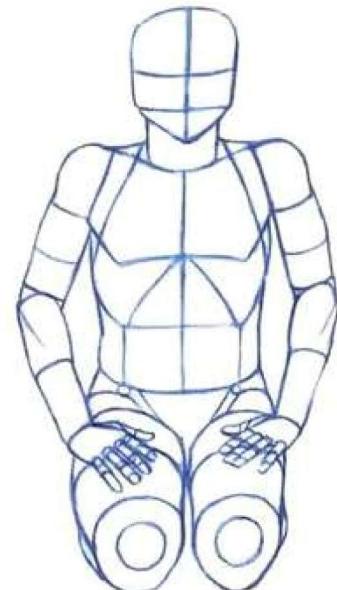
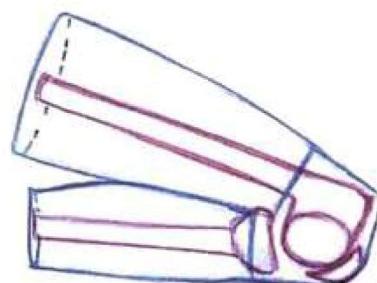
The worst example is to draw the condyle of the femur as a circle and the shinbone as a straight line, as shown in the picture. This is the most erroneous way to draw a poor knee.



Incorrect answer note The shape of the knee joint when the leg is bent

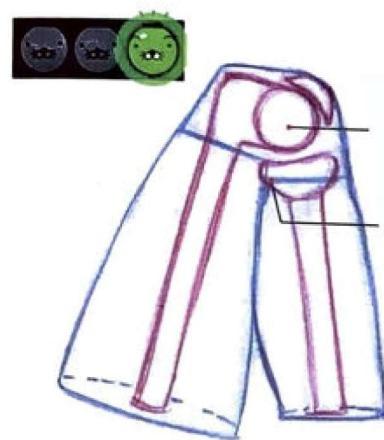


When the leg is flexed and the articular eminence of the femur is erected, the height of the knee is increased. You should think and draw the knee as a square rather than a circle.  
(Femoral joint elevation + Tibial joint elevation = Thickness UP)



The shape of the knee joint when the knee is fully bent

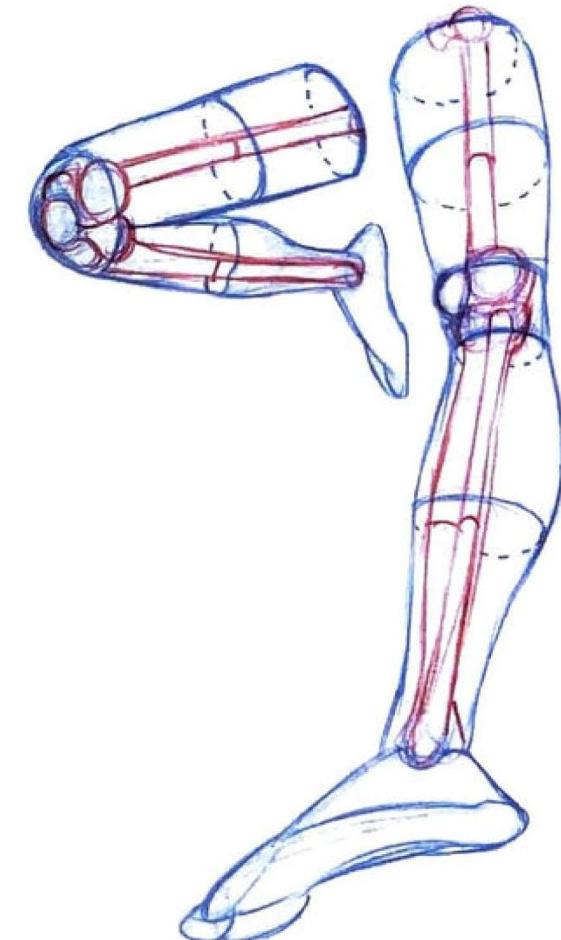
Incorrect answer note Knee joint shape when legs are folded



The shape of the articular eminence on the femur, like a golf club, creates the maximum flexion angle for the thigh and calf when the leg is flexed.



application of the leg



Observe  
how the shape  
of the real  
leg is shaped!



### 3 Center of gravity is really important



#### View the picture objectively

I said it like a joke, but in fact, we already have a sense of the center of gravity. For example, we can feel the difference in the running postures in the picture on the right. When we look at a photograph or a painting someone else has drawn, it is easy to see whether the posture is stable or unstable, stationary or moving. But why do you draw the center of gravity wrong when you draw a picture yourself? The reason is that when you look at a picture you have drawn, you are not as objective as looking at other images. Also, I feel the awkwardness of the center of gravity, but there are many cases where I don't know exactly where to fix it.

The proportions, volume, and shape of the body were exactly

If it looks awkward, the culprit is the center of gravity.

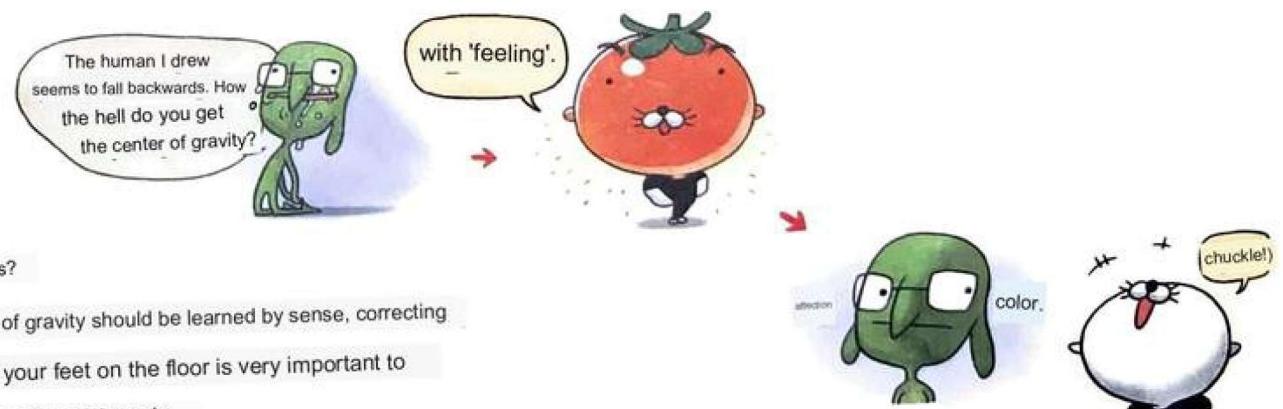
However, since this center of gravity changes every time it moves,

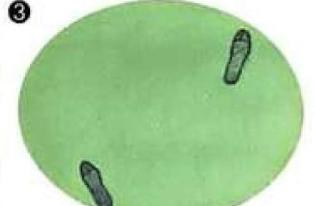
there is no specific theory that can be formulated. For

example, what should I do if I want to make the figure stand up, but it keeps falling backwards?

right, but I had to lean forward somewhere or pull my legs back to center. The center of gravity should be learned by sense, correcting and revising until the picture does not look awkward. First of all, the position of your feet on the floor is very important to

keep your center of gravity stable. Let's first look at the width of the foot and the direction of the sole.



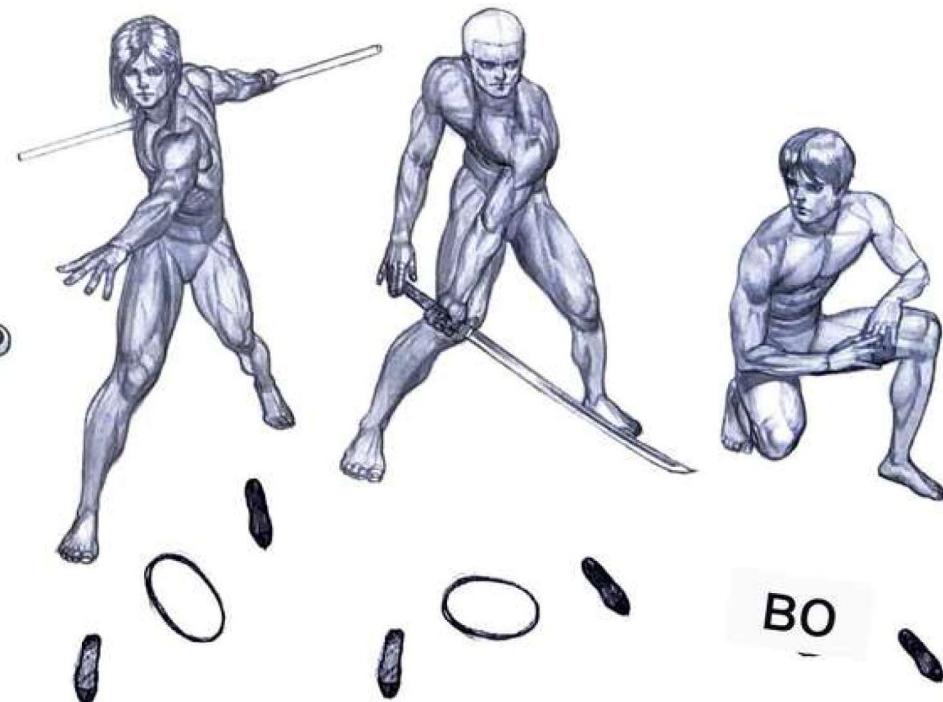
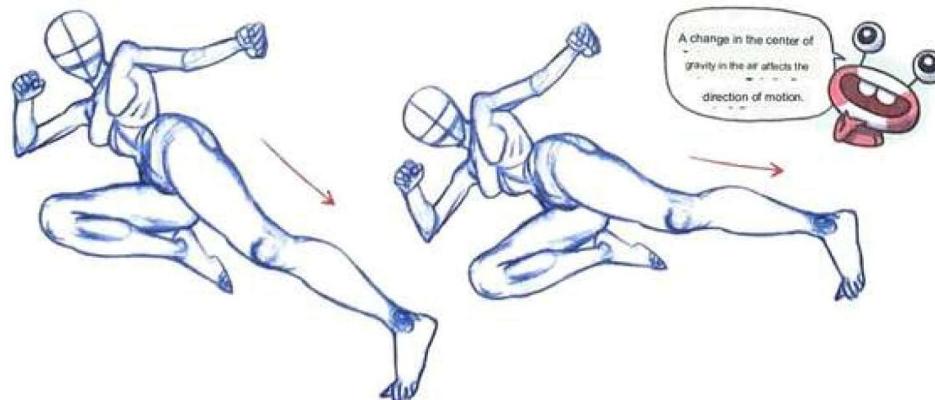
foot length and position	<b>1</b> 	<b>2</b> 	<b>3</b> 
center of gravity	<b>falls easily</b>	Falls when force is applied back and forth	most stable



If you stand with your feet attached to the letter 11 like number 1, the upper body can move within the light green area. The attention posture is the easiest to fall over, and it is the easiest posture to make a mistake when drawing. In No. 2, the upper body movement was possible from side to side by spreading the feet to the sides, but when force is applied back and forth, the center of gravity collapses. As in No. 2, if you spread the distance between the sides and front and back and place your feet in a diagonal position, the range of movement of the upper body is widened, so there is a high probability that the center will be drawn correctly.

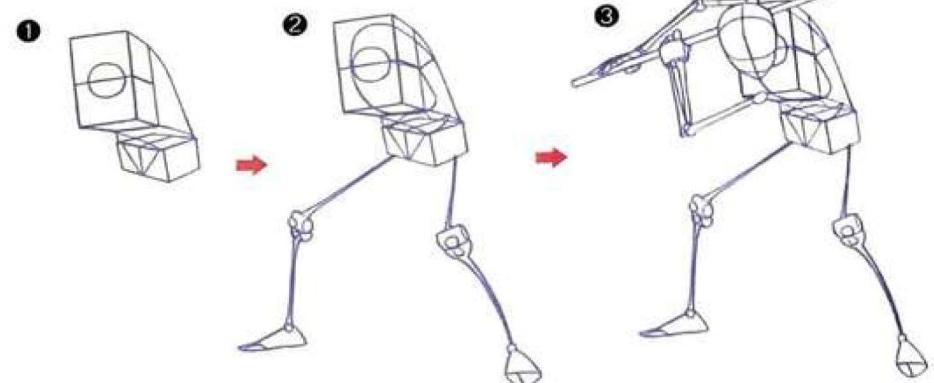
### Let's take a stand

Diagonal footing is common in dynamic action. You can create a much more stable posture by always taking a pose and feeling which foot is being weighted before drawing. On the other hand, when the human body is floating in the air, you don't have to think as deeply about the center of gravity as on the ground.

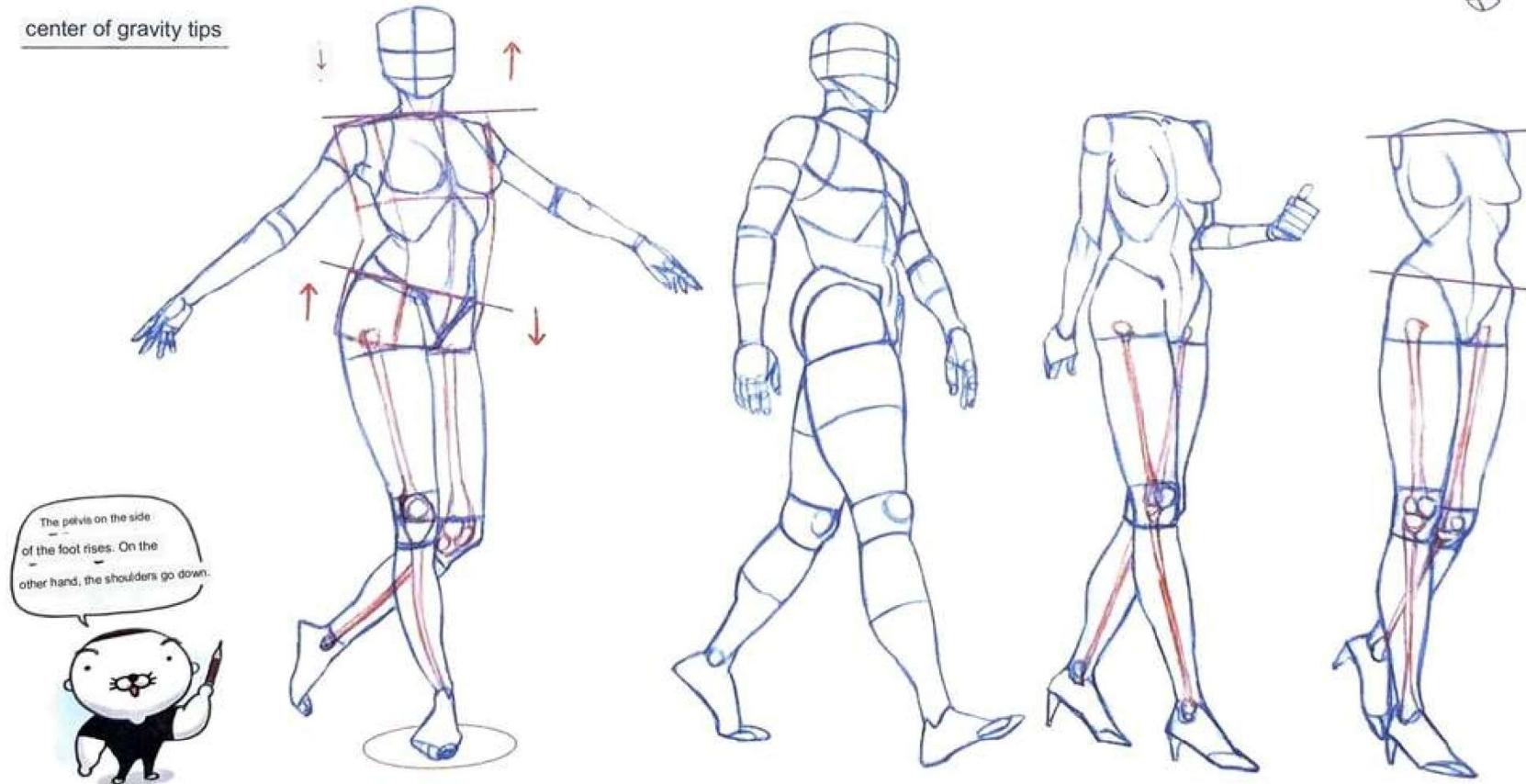


To draw a character with a stable center of gravity, you must first adjust the inclination of the torso, as shown in number 2 on the right. This is because the posture of the lower body changes depending on the flow of the torso, which carries the most weight among the human body. In step 2, not only do you select the position of your feet that fits the center of gravity of your torso, but you also find the posture of your legs according to the flow you want to express. In step 4, draw the movements of the arms that match the flow of the torso and legs drawn earlier on a line that does not affect the center of gravity. The object you are holding in your hand also affects the center of gravity, so this is also an important factor that cannot be left out of the calculation.

The order of drawing the skeleton

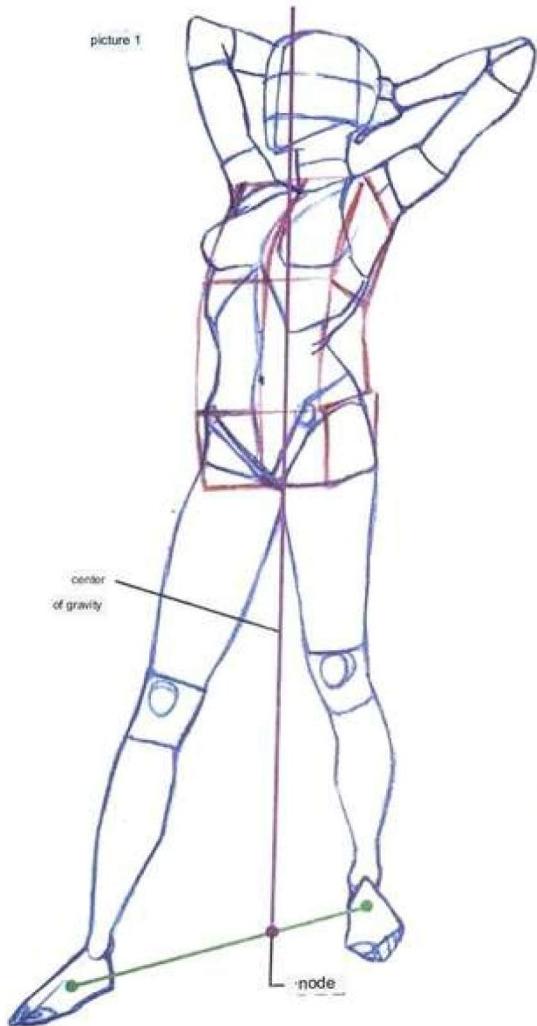


#### center of gravity tips



The weight is placed on the stepping foot, and the slope of the shoulder line and the pelvis diverge accordingly to balance the body.

picture 1



picture 2

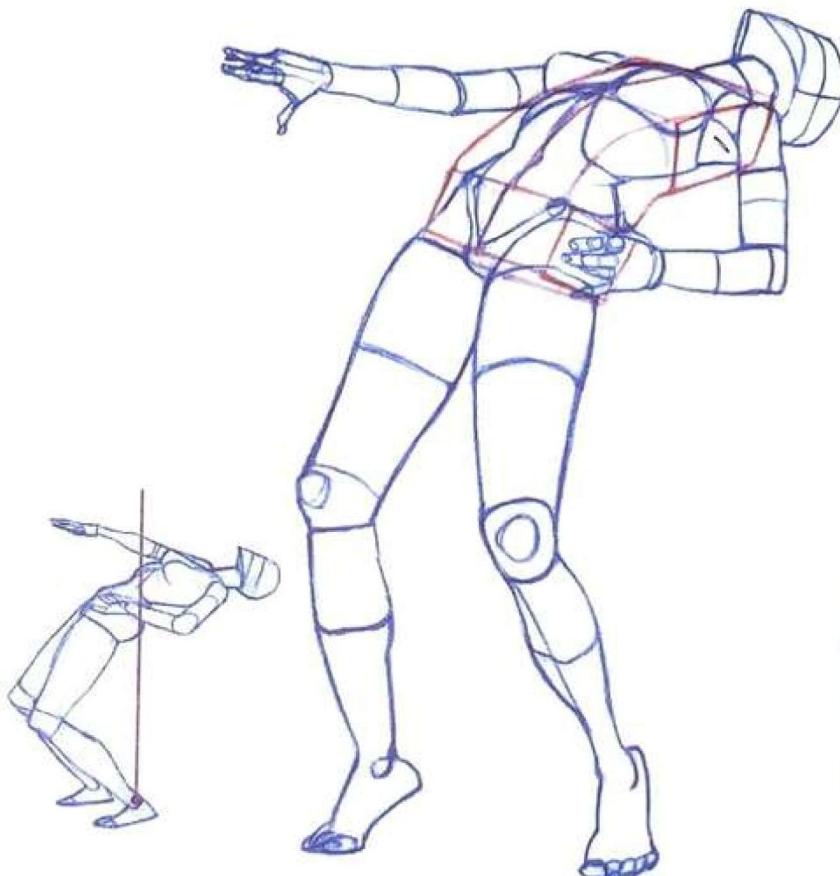
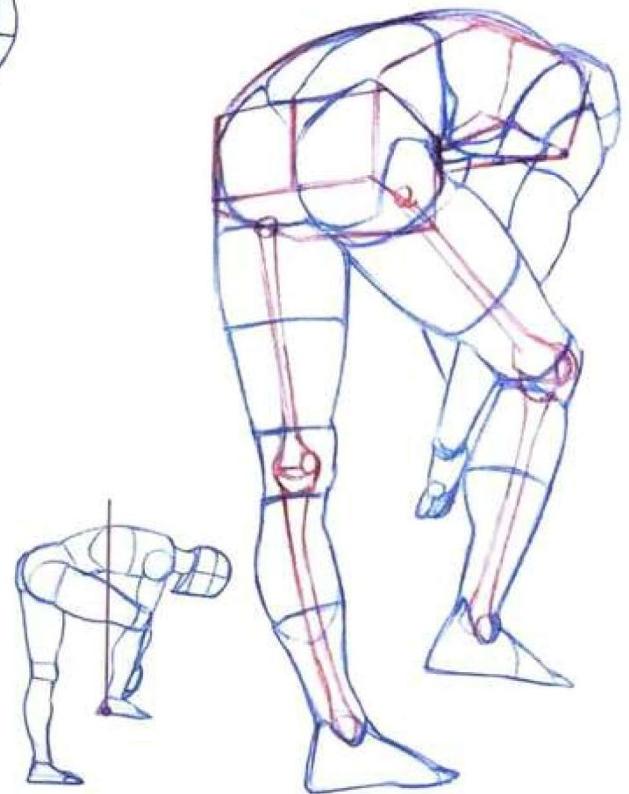


Figure 3



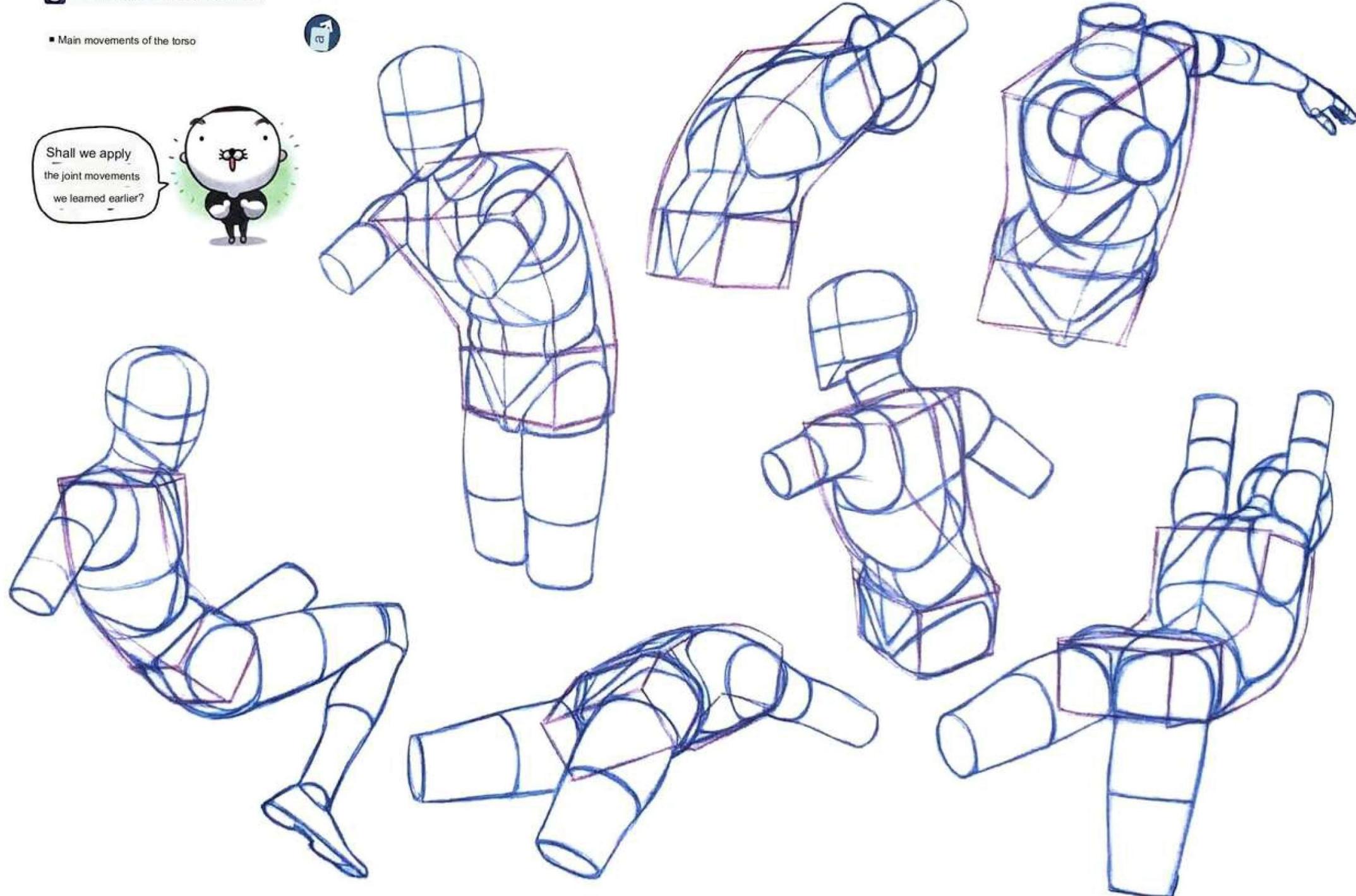
### Positioning the center of gravity

When holding the center of gravity, look at your posture from a side angle, then divide it vertically into two so that the left and right sides have the same weight. The point where the center of gravity line meets the floor is called the 'center point'. In order for the center of gravity to be correct, the center point must be directly touching the foot as shown in Figures 2 and 3, or it must fall over a line drawn between the feet when it does not touch the foot as in Figure 1. There are several ways to balance the center of gravity. Please note that this method is one of them.

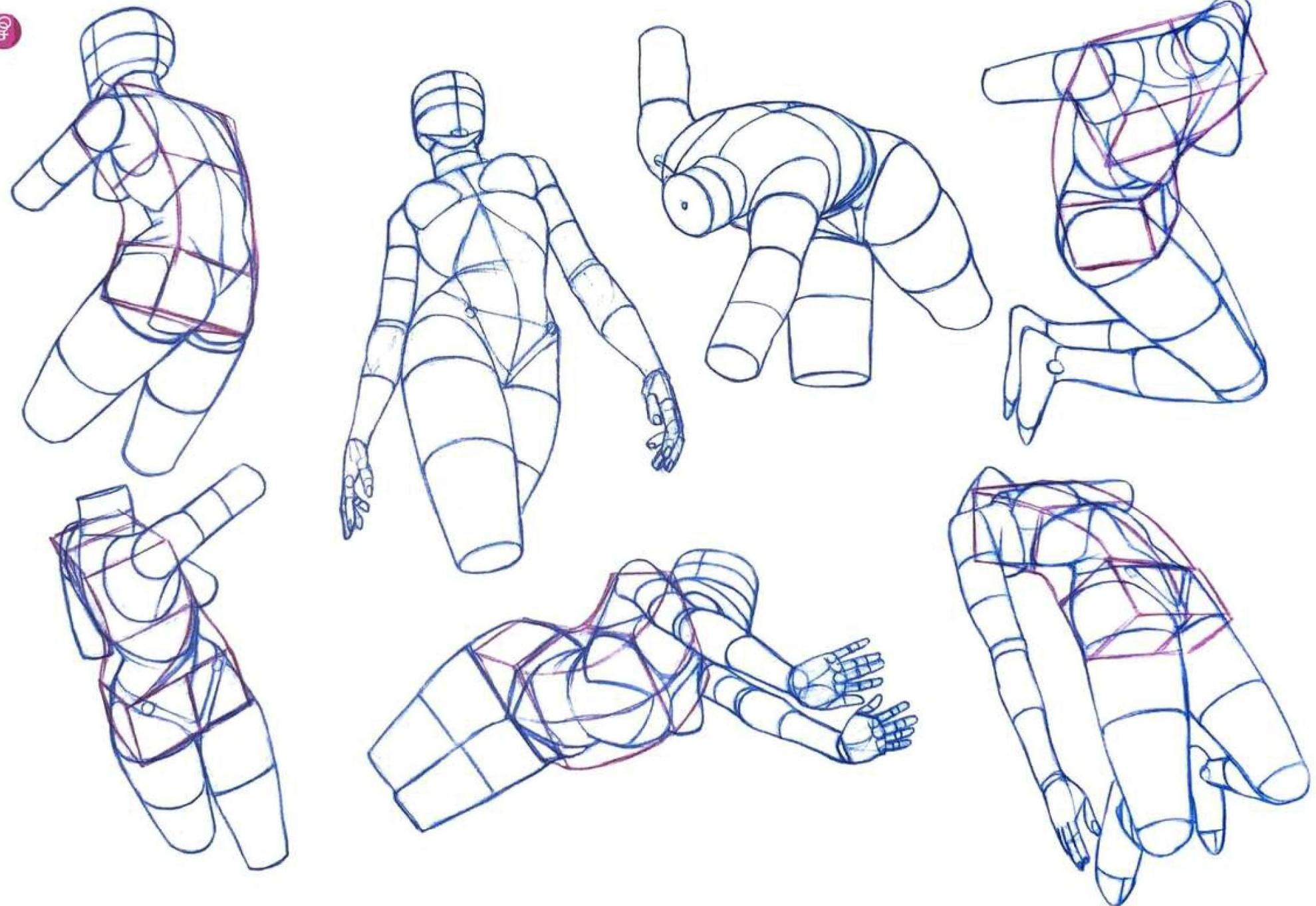


## 9 Various applications of figure painting

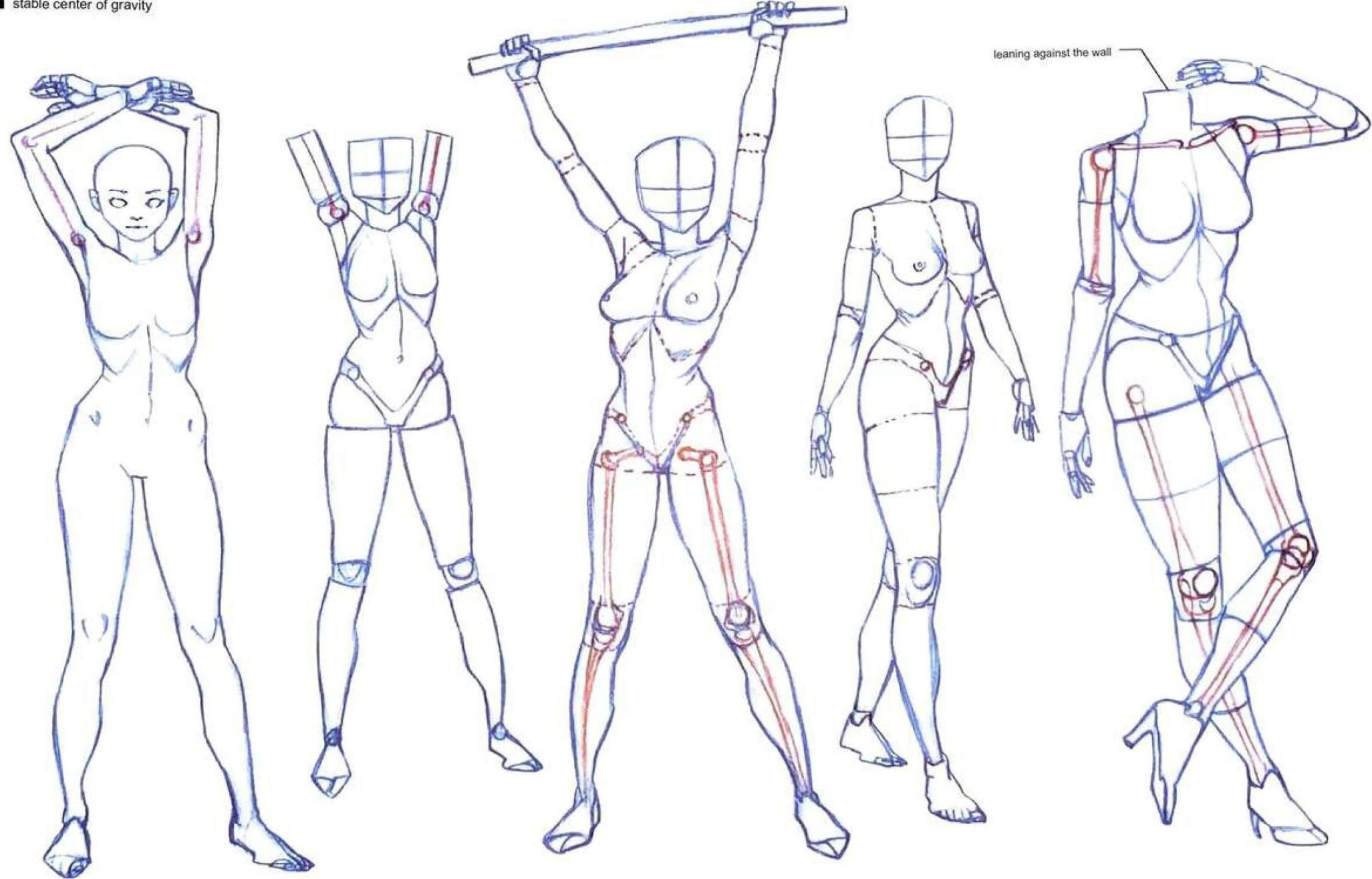
### ■ Main movements of the torso

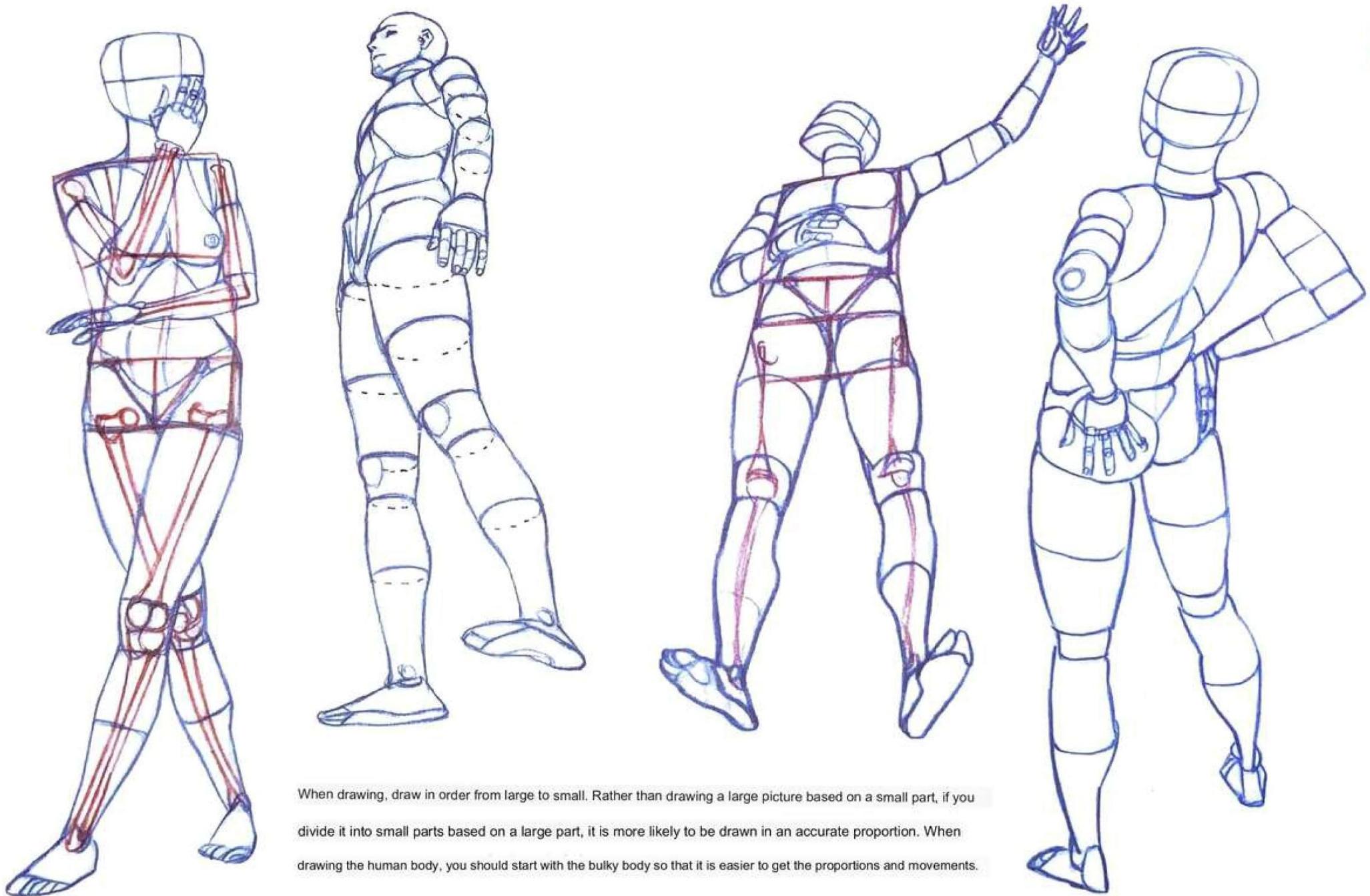


01



■ stable center of gravity

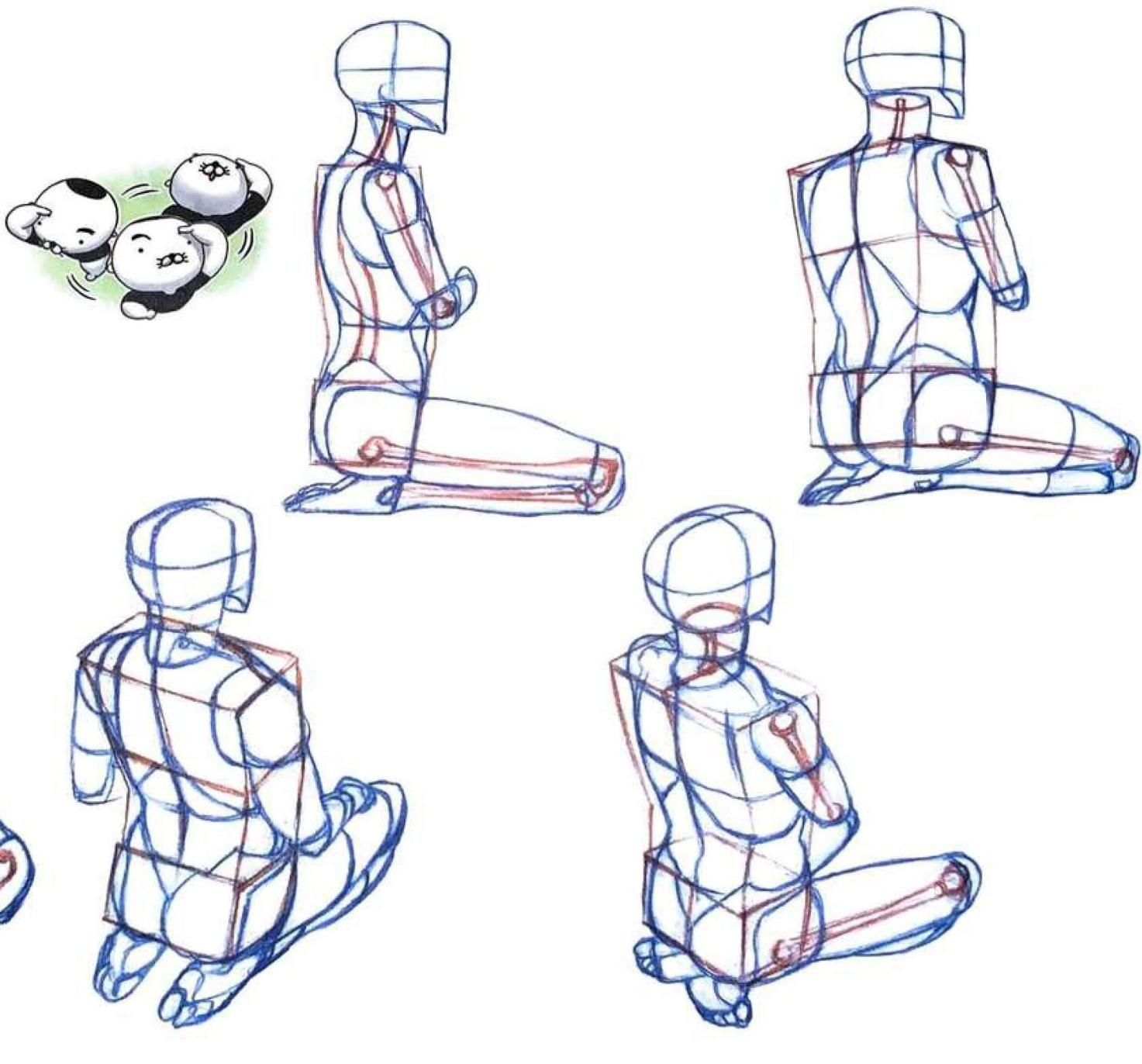


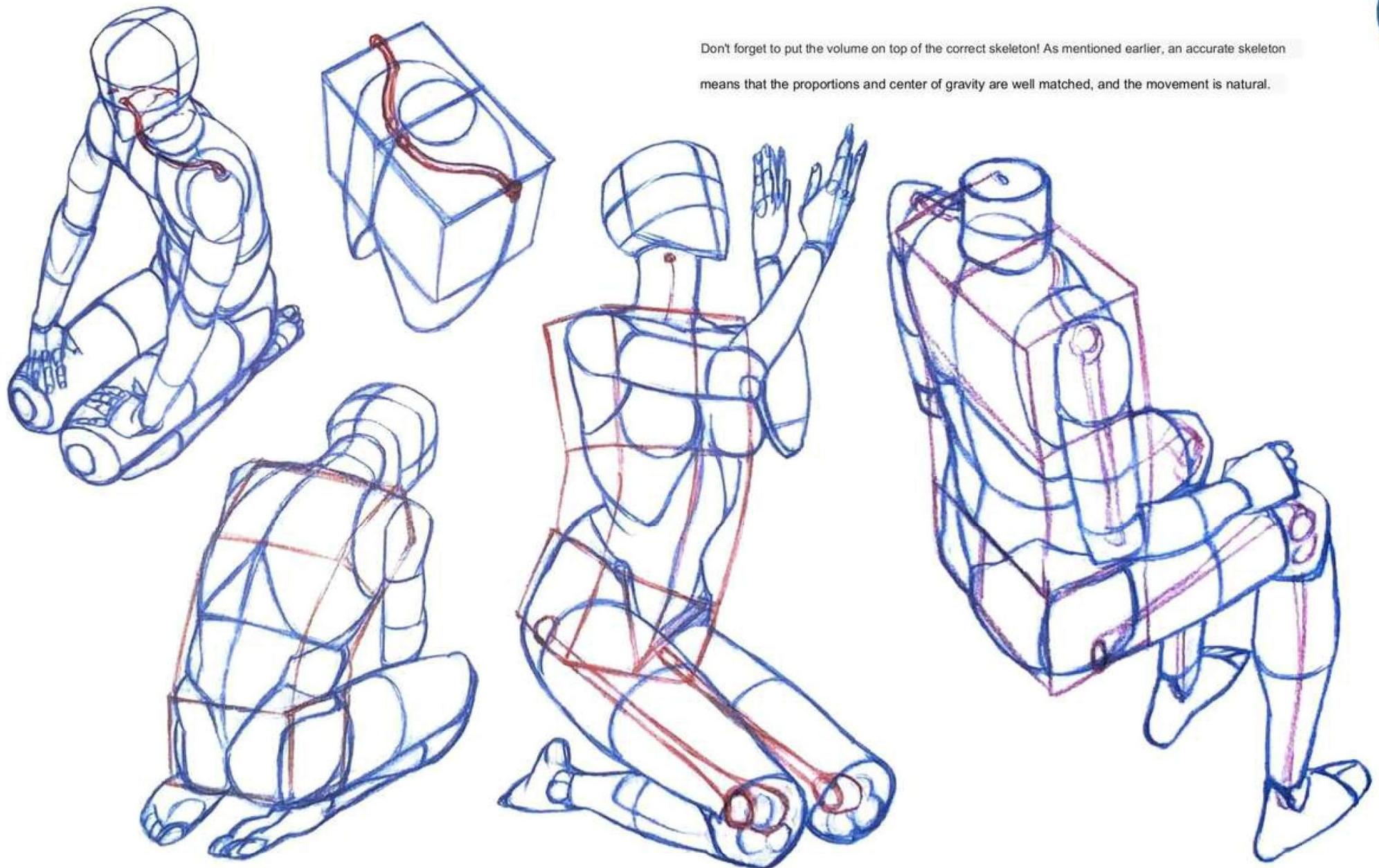


When drawing, draw in order from large to small. Rather than drawing a large picture based on a small part, if you divide it into small parts based on a large part, it is more likely to be drawn in an accurate proportion. When drawing the human body, you should start with the bulky body so that it is easier to get the proportions and movements.

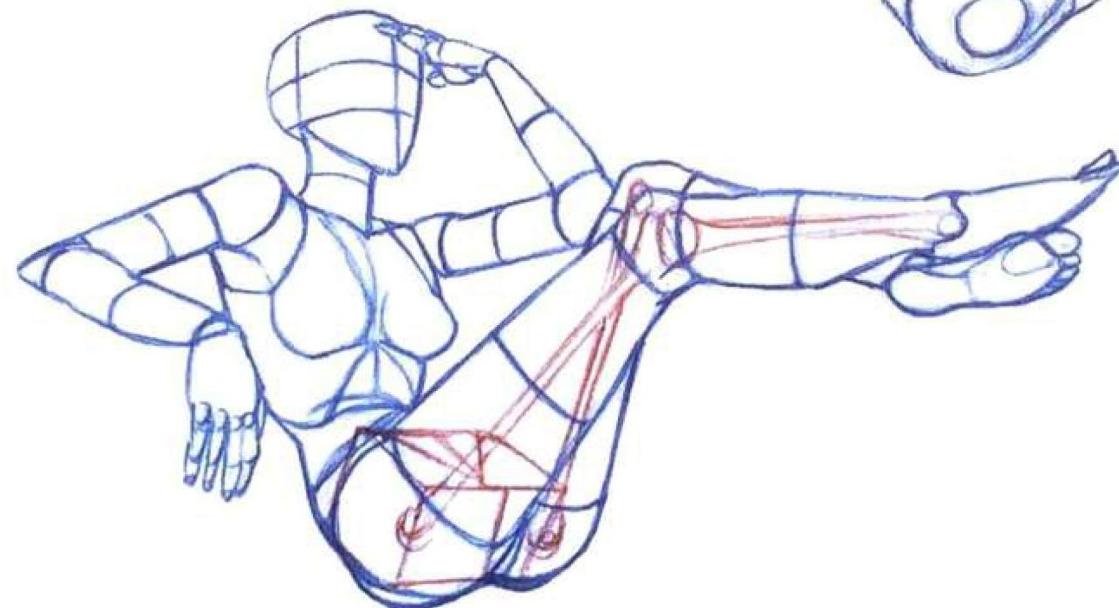
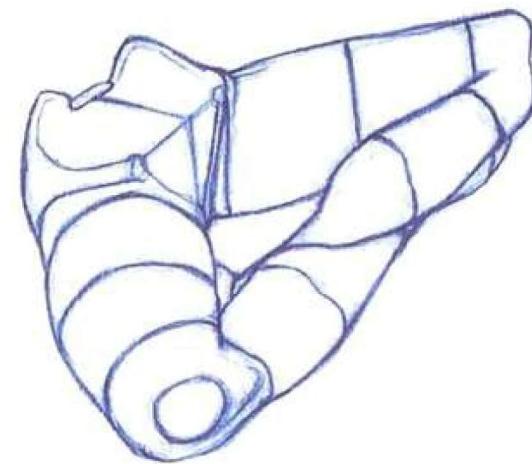
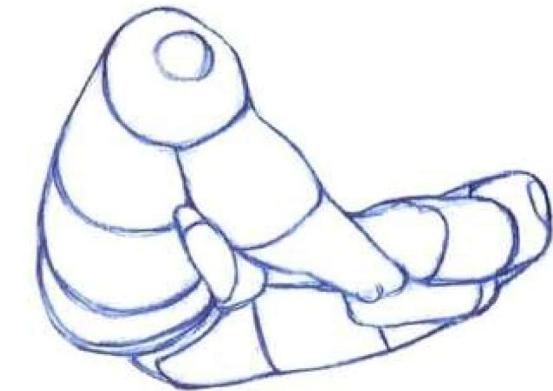
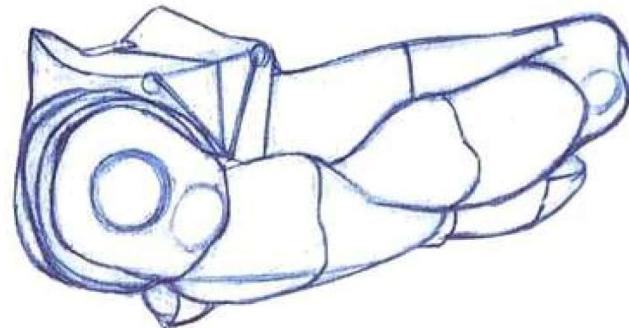
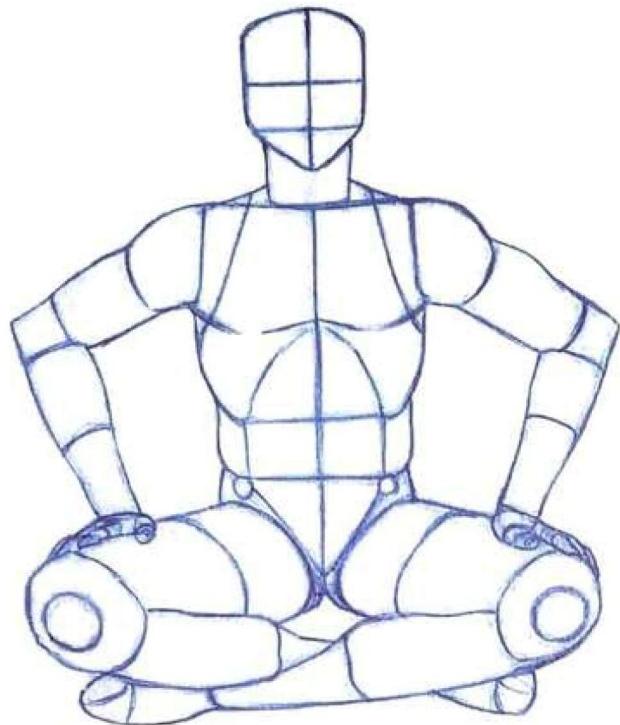
- Various sitting

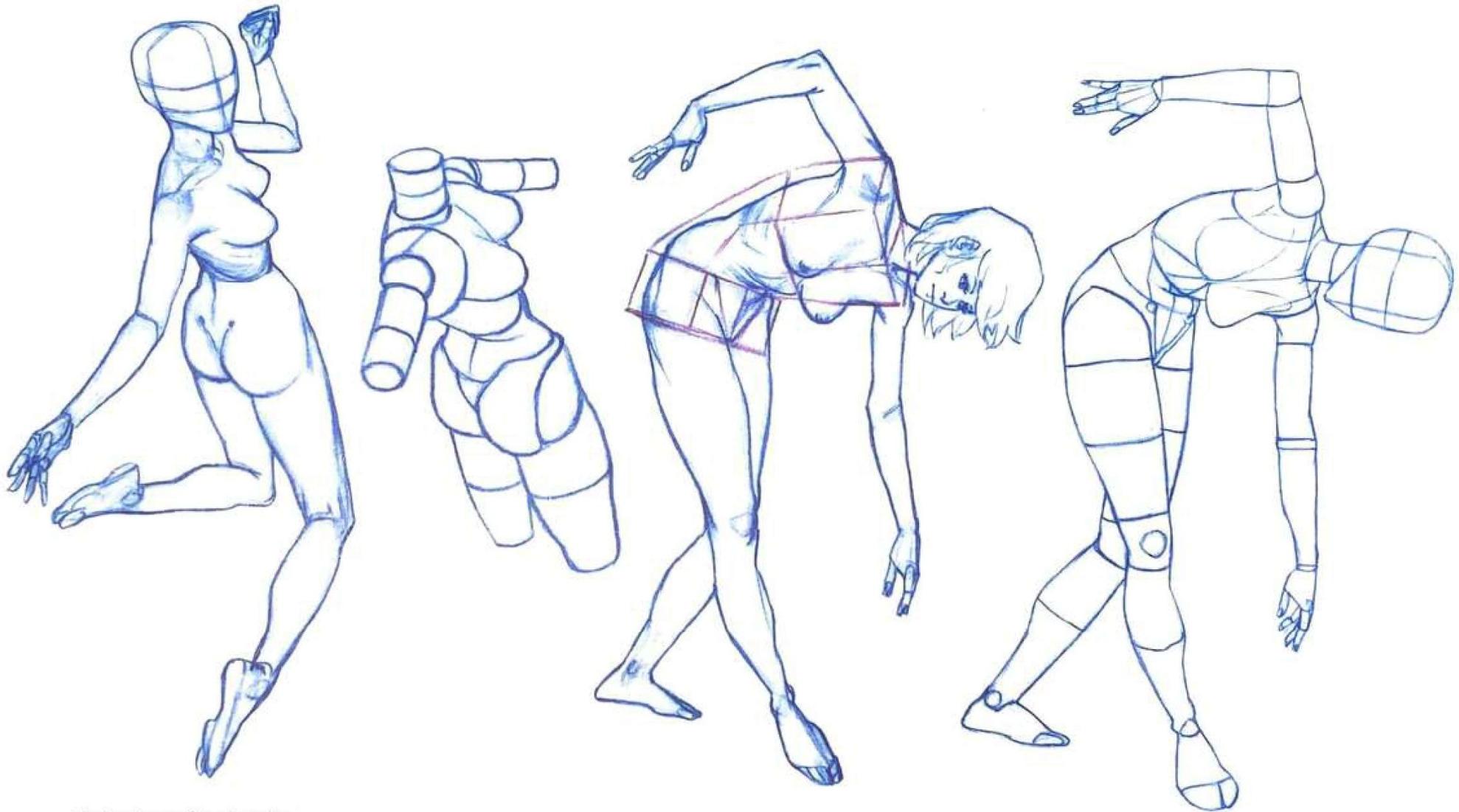
Drawing one posture from multiple angles helps to understand the flow and volume of the body in three dimensions. Study the movements of the joints while changing your posture little by little.





Don't forget to put the volume on top of the correct skeleton! As mentioned earlier, an accurate skeleton means that the proportions and center of gravity are well matched, and the movement is natural.





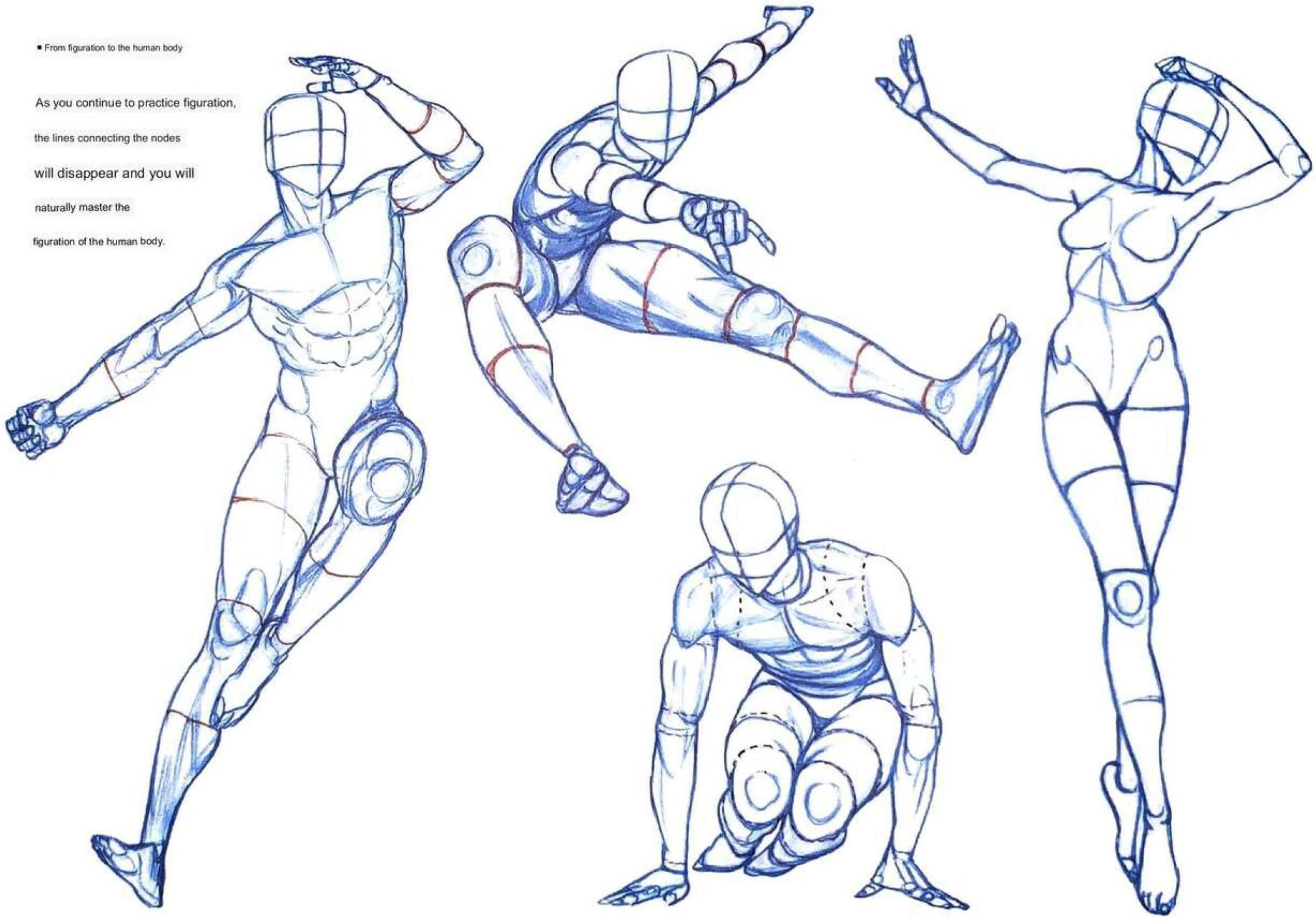
#### The importance of drawing order

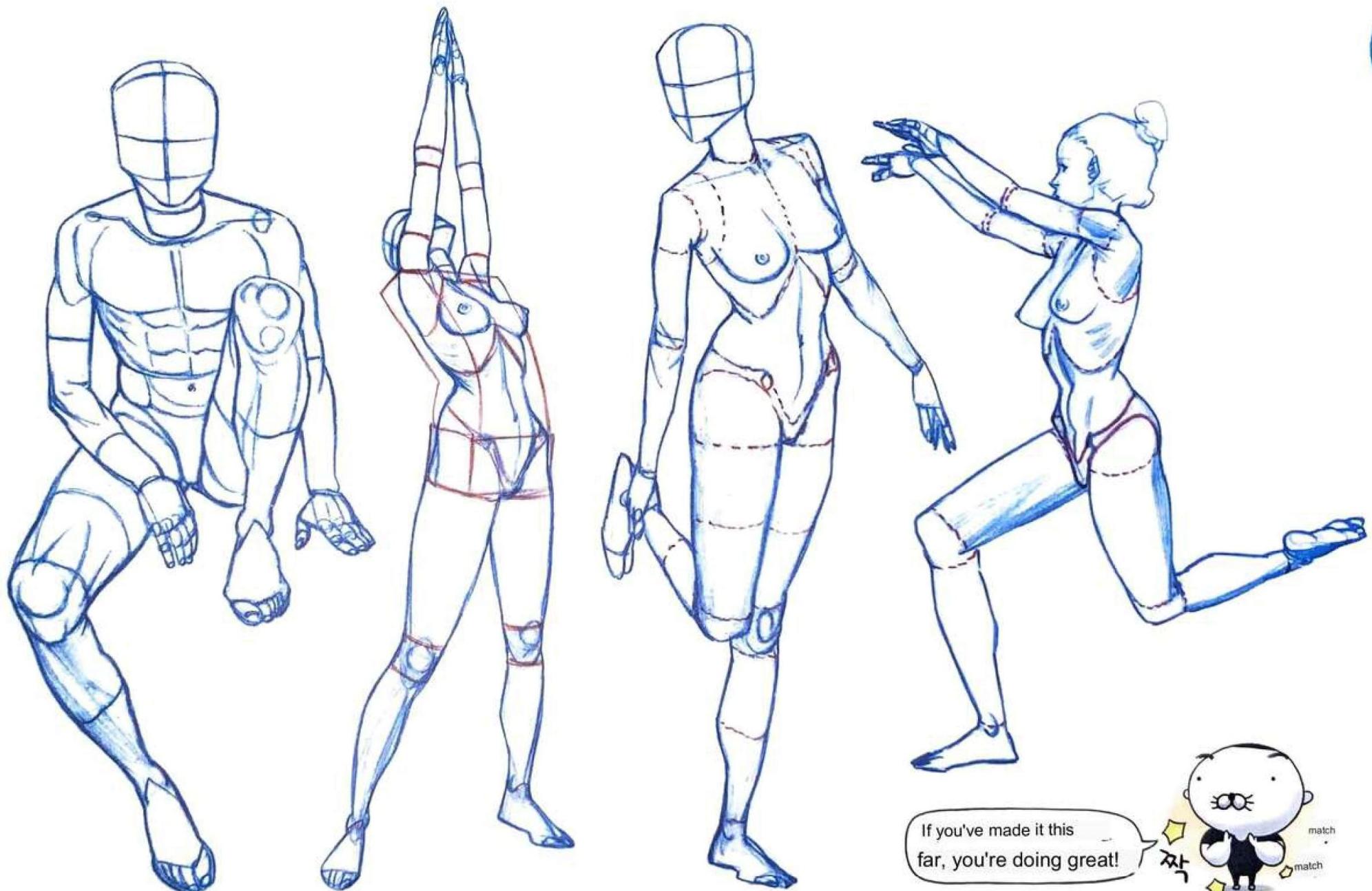
In order to draw a picture with solid basic skills, theory and practice must be combined. If you focus too much on theory, the character will be drawn stiffly. Conversely, if you practice only practical skills without theoretical knowledge, you may find it difficult to draw various postures or compositions due to poor application skills. When practicing, it's important not to try to complete a picture all at once like professional artists do, but to draw sequentially from the skeleton through figure drawing. Professional writers work by mentally calculating skeletons and figures through a lot of practice, not skipping them.



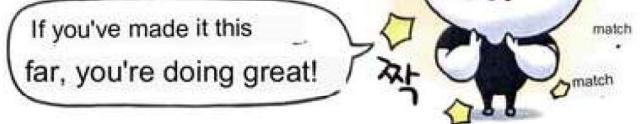
■ From figuration to the human body

As you continue to practice figuration,  
the lines connecting the nodes  
will disappear and you will  
naturally master the  
figuration of the human body.





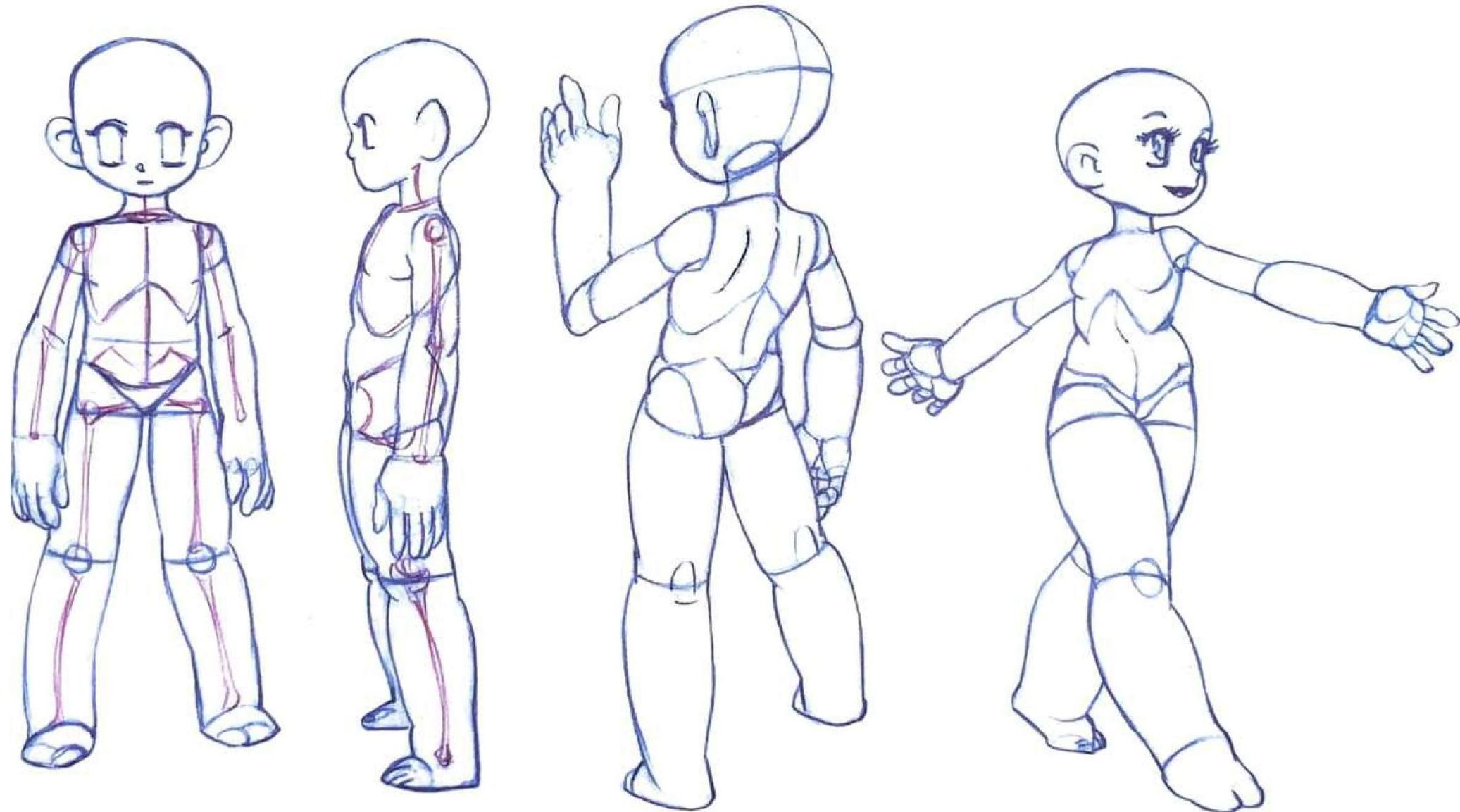
If you've made it this  
far, you're doing great!

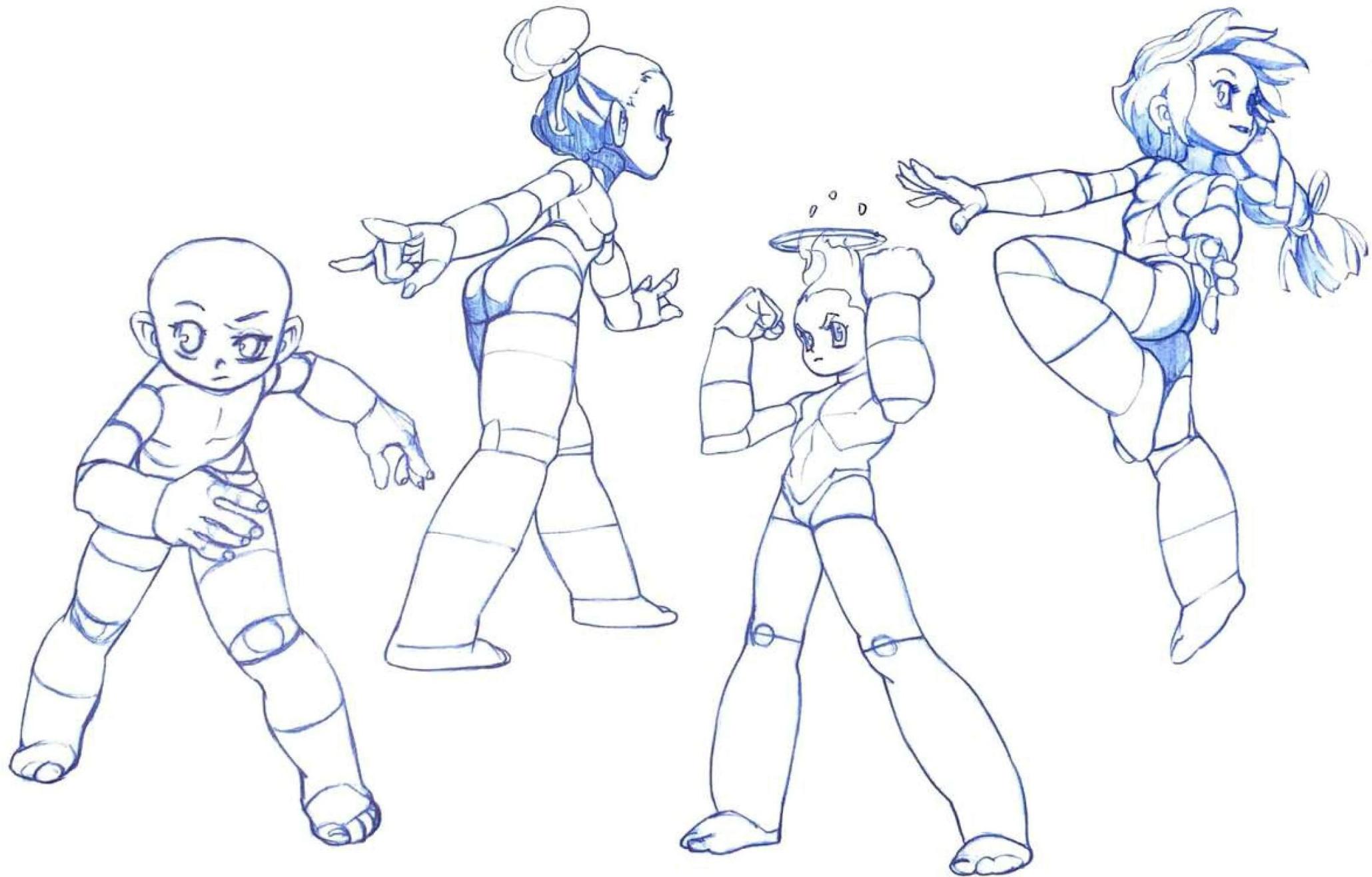


■ Understanding characters that have been deformed through figure painting

Figure drawing can be applied not only to the realistic proportions of polarized objects, but also to various drawing objects.

When designing a deformed SD character or creature, you can draw a three-dimensional shape more easily if the figure is the base. If the ratio or appearance changes every time you draw a character, or if it is difficult to change the character's posture and angle, practice figure drawing to increase your structural understanding!





## face recognition



Why is it important to draw faces? Humans, who have lived in social bonds for a long time, have developed the ability to communicate with each other.

For communication, complex interactions through faces were important. To be able to tell who was who, they had to be able to spot differences in appearance and read subtle facial expressions that conveyed emotions and intentions. Community life made us sensitively aware of information about faces. Scientifically, when the human brain sees an object, only the area responsible for vision is activated, but when looking at a human face, most sensory organs such as sight, smell, hearing, and touch are activated at the same time. When we see a face in a picture, our brain reacts as sensitively as when we see a face in real life. The sense of recognizing a face like this is immediate and delicate, so high precision is required to draw a face.

The face is also the most interesting part of the human body. This is because it is a powerful means of expression that can give an impression to a character and directly express emotions. It is also the area where students practice the most. The main concern they have when drawing faces is that they always draw only limited angles. As if the angles of all good selfies are the same. Structural research on the face is required to express an attractive appearance and persuasive facial expression regardless of various angles. In this chapter, we will deal with how to understand the face three-dimensionally by making it a figure so that the shape and proportion do not collapse even from various angles. We will also anatomically study how contrast is created on the face through the structure of the facial bones and which muscles are used when making facial expressions.

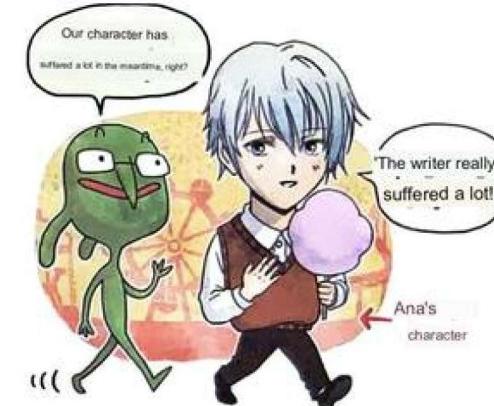




Drawing faces  
is really hard!



Ms. Ana, who covered up the parts she couldn't draw because of her lack of drawing.



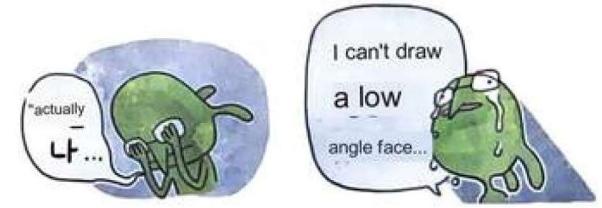
Thanks to hard drawing practice,  
I came out with the character.



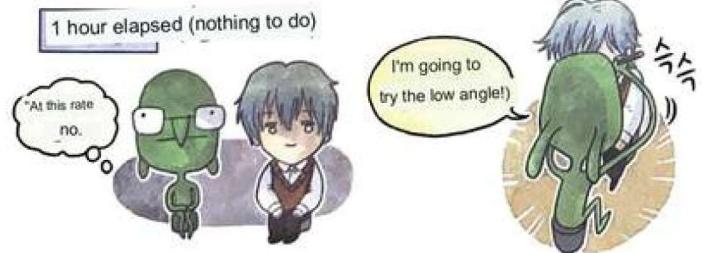
Gee, the character wants to ride a Viking.



Ana is perplexed.



The character learns why he was only at eye level.



Ana decided to take on the challenge to expand her character's field of activity.



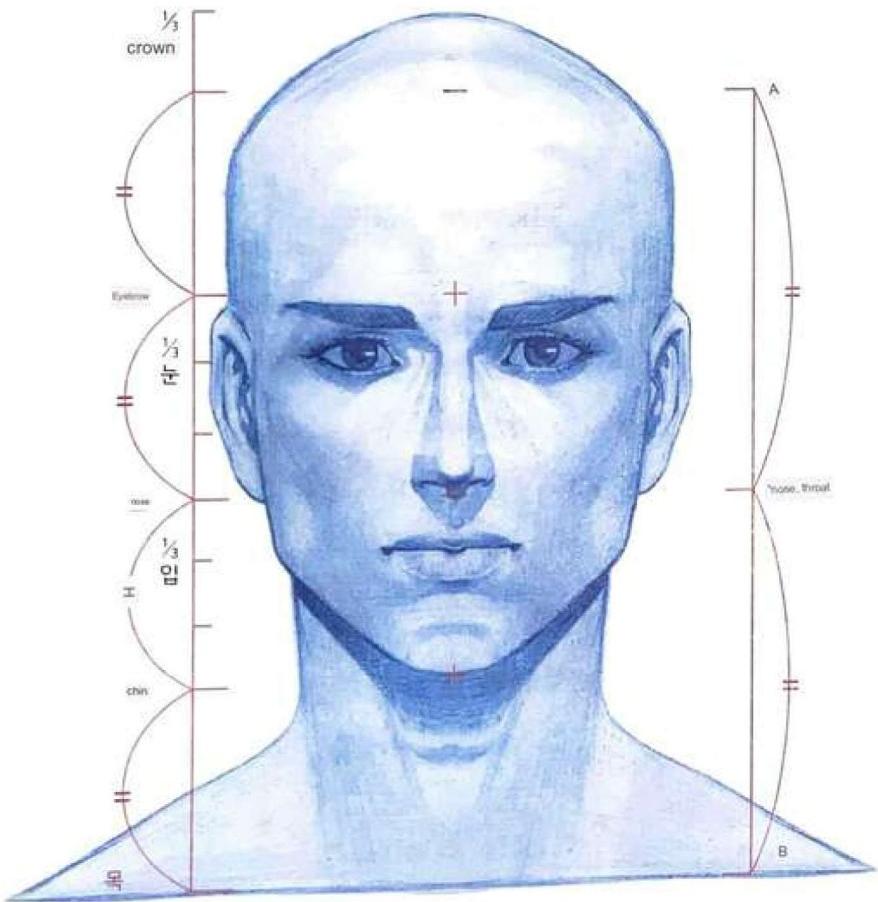
It is confirmed once again that it is difficult to draw an angled face.



Then, let's learn how to draw faces with Rock Sae-saeng!

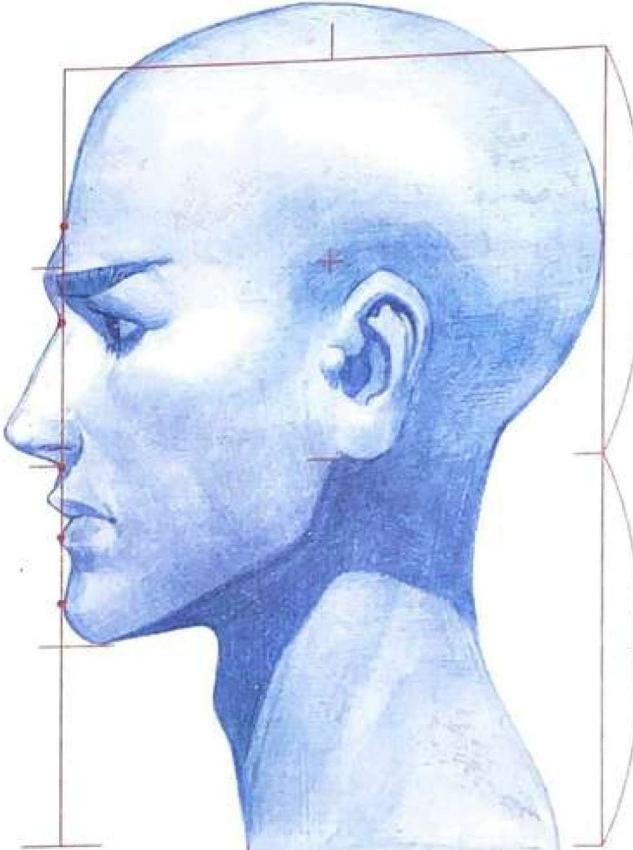
## 1 face proportions

### ■ Male facial features and equal parts



### male front face proportions

There is no right answer for facial proportions because each artist has a different preference for facial proportions. As shown in the picture above, I put each point in the same equal position to adjust the proportions of the face. Dividing the length from A to B in half is the location of the nose and neck. The length from the tip of the chin to the collarbone is the point of the neck. The frontal width of the head is narrower than the side width.



The baseline of the line on the side of the face

### How to measure the width of a feature

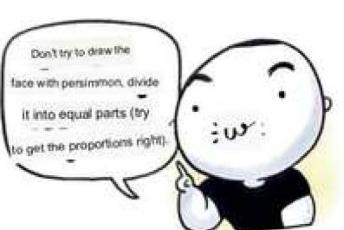
One eye goes in between the eyes. The width of the nose is equal to the width of the eyes. If you lower the point where the pupils of both eyes start vertically, it touches the corners of your mouth.

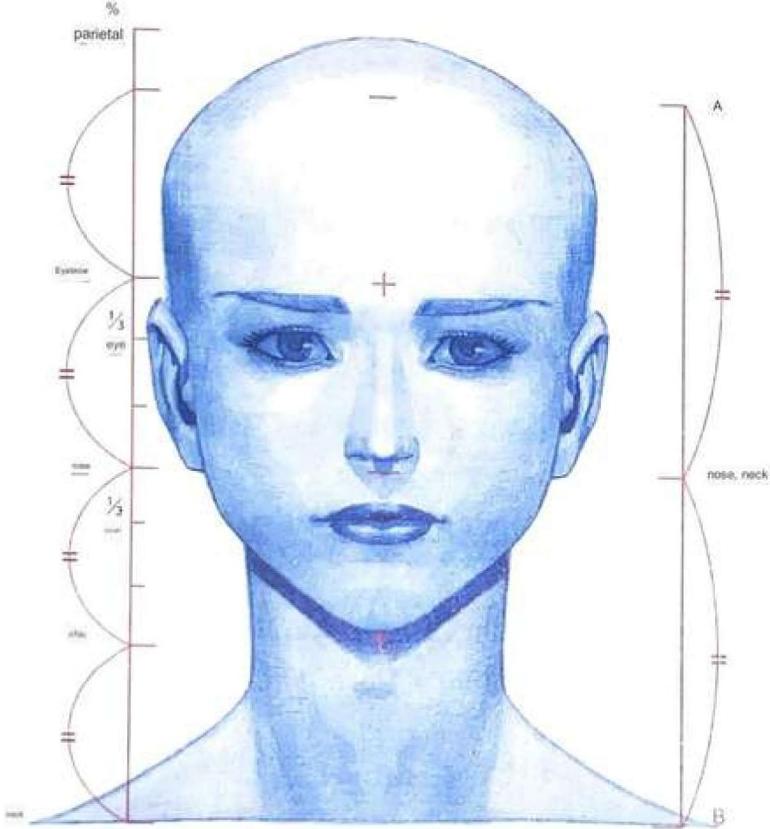
### The width from the point

where the eye ends to the outline of the face is the length of the eye.

Parts that protrude beyond the line: eyebrow arch, nose, upper lip

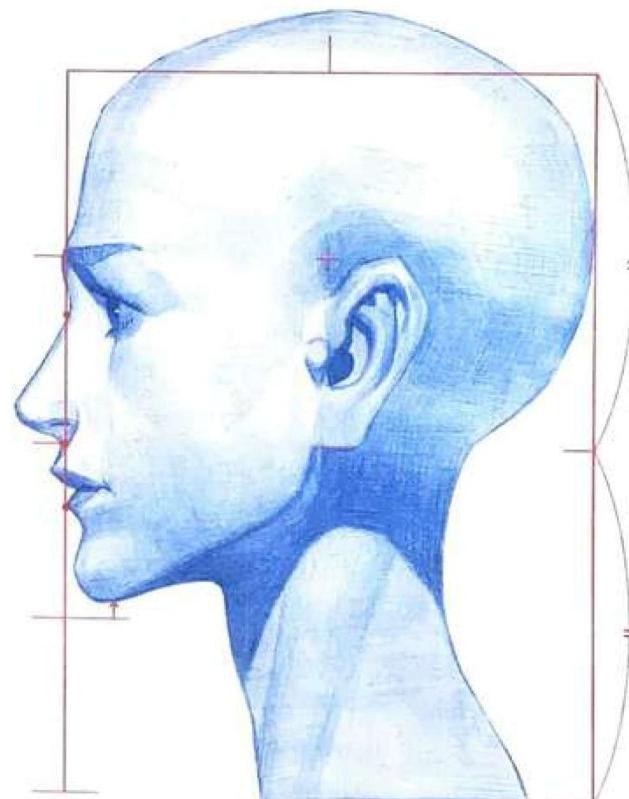
Parts that touch the line: the starting point of the forehead above the eyebrow arch, the root of the nose, the point under the nose, the lower lip, and the part that protrudes forward from the chin. Part that is depressed inside the line: the forehead, the gap between the lips, the lower lip, and the lower part of the chin broken side





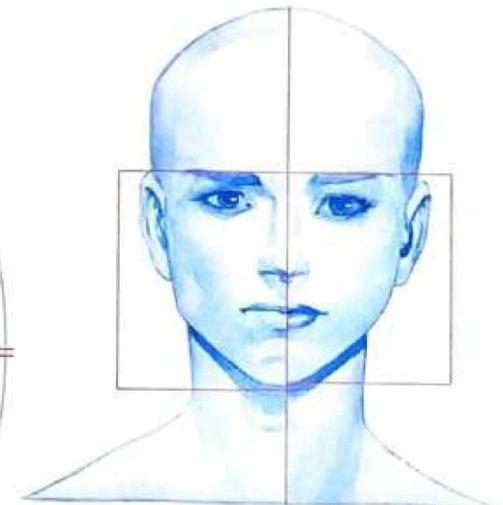
Proportion of the female frontal face

Women have wide upper eyes and a short chin, giving the impression of a baby face. Women have thinner chins than men due to hormonal influences. The size of the ears is equal to the distance from the eyebrows to the nose, and the eyebrows are drawn longer than the length of the eyes.



Facial features seen from the side

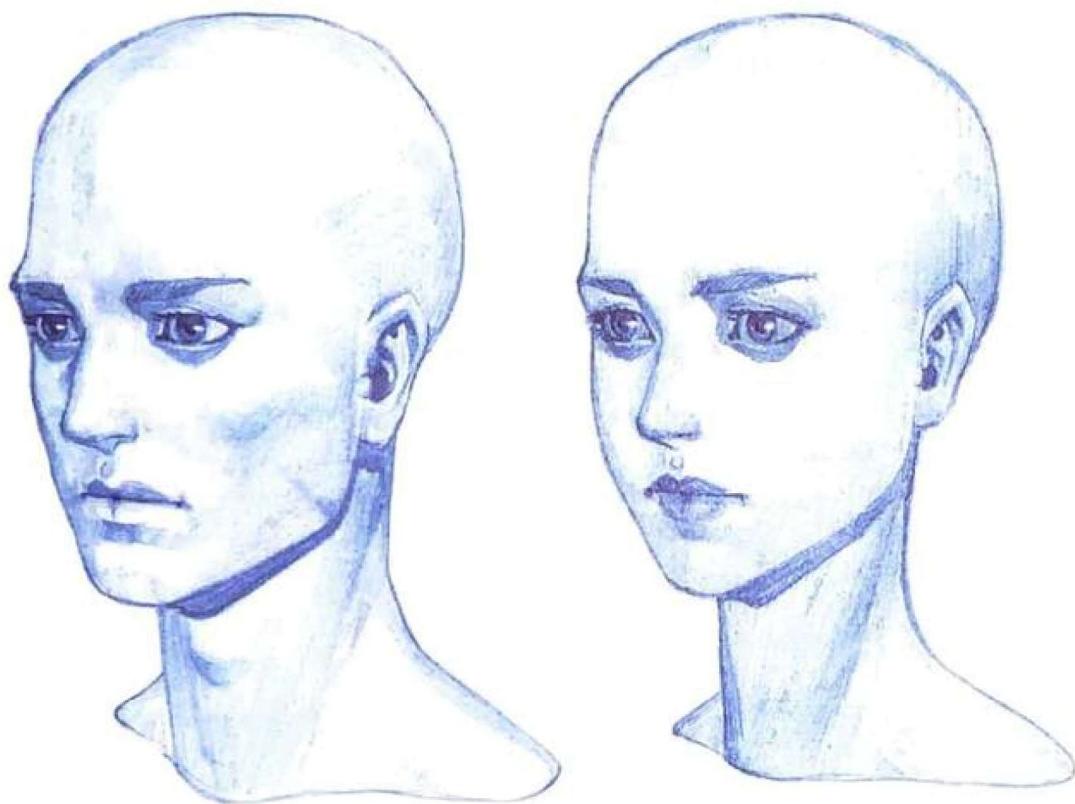
When viewed from the side, the slope of the nostrils is horizontal, but the slope of the lower part of the nose is not. In women, the protrusion of the arch of the eyebrows is more gentle, and the starting point of the bridge of the nose is lower. Also, the lower jaw is less developed than that of men, so the protruding point of the chin does not reach the reference line of the side of the face.



#### Difference between male and female faces

If you directly compare the frontal faces of men and women, you can see at a glance that the length from the upper eyebrows to the tip of the chin is shorter in women than in men. The flow of the chin is straight for men and curved for women. The length of the neck is the same in men and women, but women appear longer due to the thin neck and low height of the trapezius muscle.

## ■ How is a standard face made?



### Facial characteristics of Westerners and Asians

The shape of the face is developed in various ways depending on the climatic environment, topographical characteristics, and race, so there are many differences in the form. Westerners have developed eyebrow arches that play a role in forming shadows to protect the eyes from direct UV rays in the plains. In addition, the colder the region, the more watery the eyeballs must be protected with body heat to prevent them from freezing, so the eyes went inside, and the nose became higher as the breathing tube was lengthened to warm the cold air. As a result, Westerners' features form three-dimensional curves. Asians do not develop eyebrow arches because the forest blocks sunlight. The eyes are protruding and the lips are thick to release the increased body temperature due to the tropical climate, and the nose does not need to be high, so the overall face is flat. Even in the shape of the skull, there is a difference in three-dimensional effect, with Westerners having a long head in the front and back, and Asians having a flattened "short head" on the side. In painting, a face that properly mixes Eastern and Western characteristics is preferred. Rather than drawing multiple faces with different impressions from scratch, it is better to try various changes in impressions after practicing enough to maintain proportions from the front, side, and half-side angles of a standard face.



■ Proportional impression and change of age



picture 1



picture 2

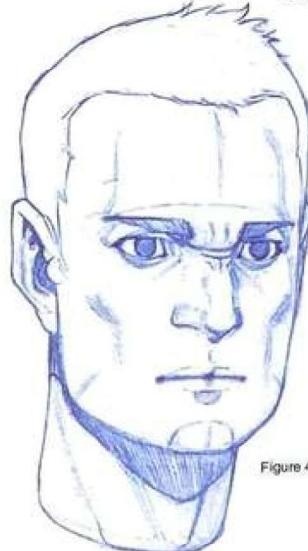


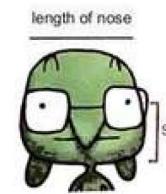
Figure 3



Figure 5



Figure 6



Growth of the upper jaw and nose in children

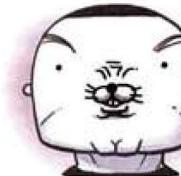
<while>

<presbyopia>

pupils and chin



\*Exposure of the whites of the eyes: the feeling of being stared at



\*short nose

: Nutrition intake Lifting the glassy upper lip to reveal teeth Developing muscles Forming a menacing impression, such as a shortened nose

• Since the area of the nose gets longer as you get older, a long nose gives a mature impression (Figure 2).

Conversely, if the nose is short, it is close to the proportion of a child, giving the impression of a baby face (Figure 1).

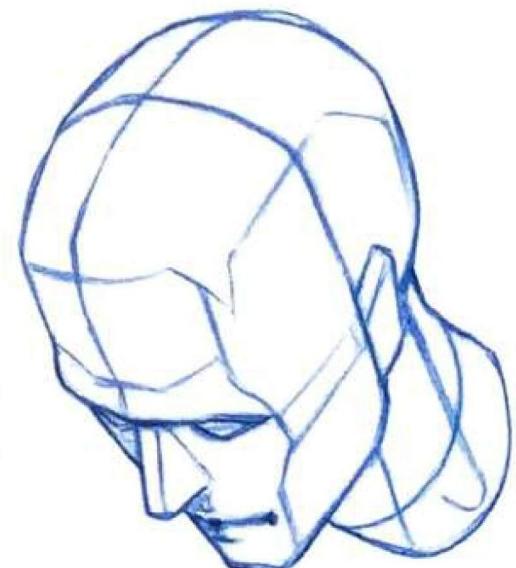
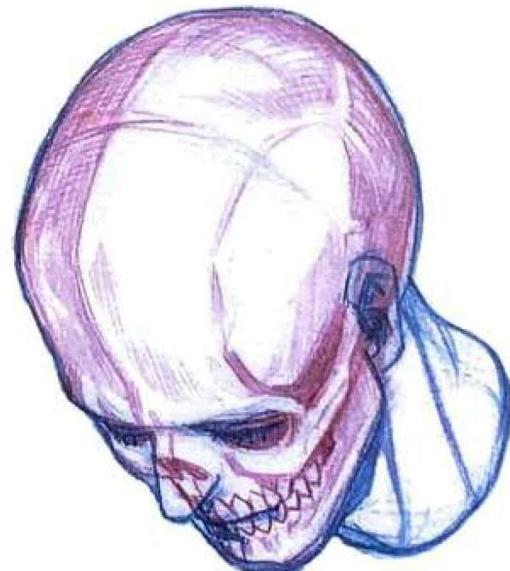
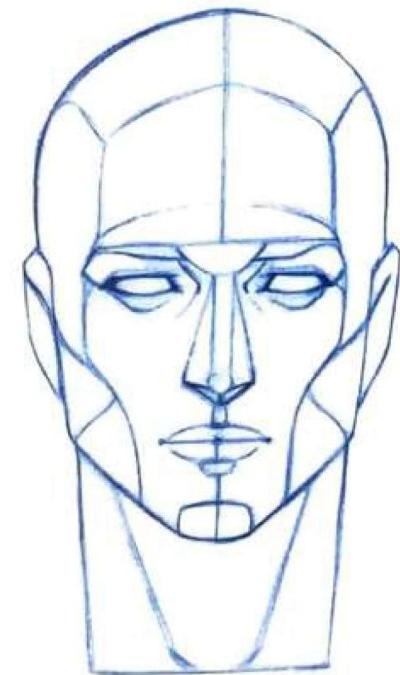
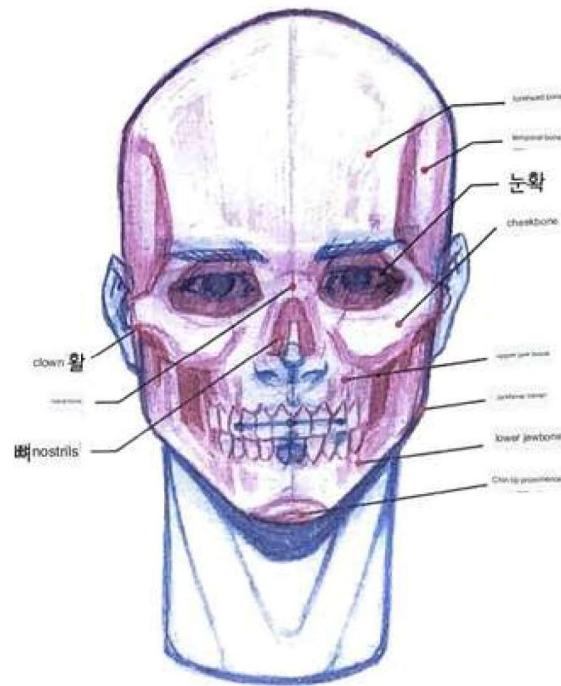
• Usually, when I'm angry, I open my eyes wide, revealing a lot of the whites of my eyes. Eyes with such a large white area exude an aggressive look (Figure 3). People who are physically muscular are more likely to have a square jaw because their facial muscles are also developed. So, a square jaw gives a sturdy impression (Figure 4).

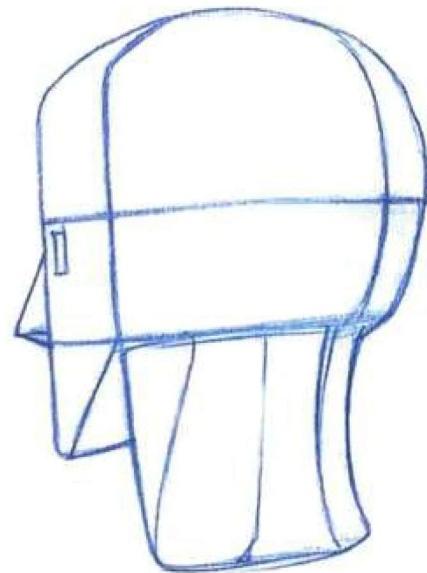
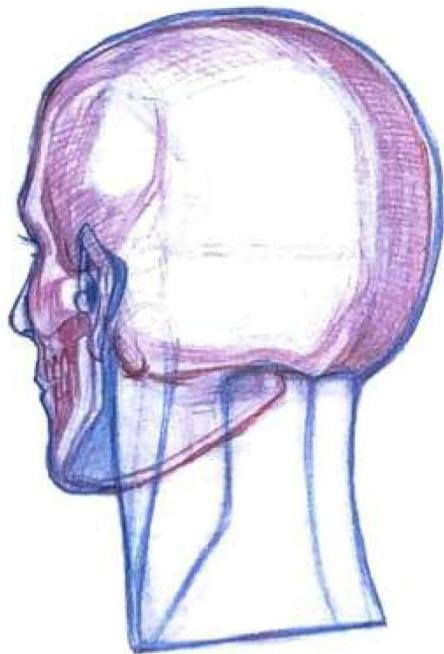
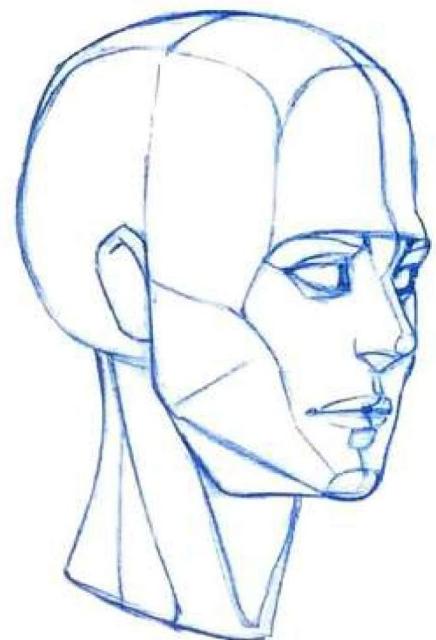
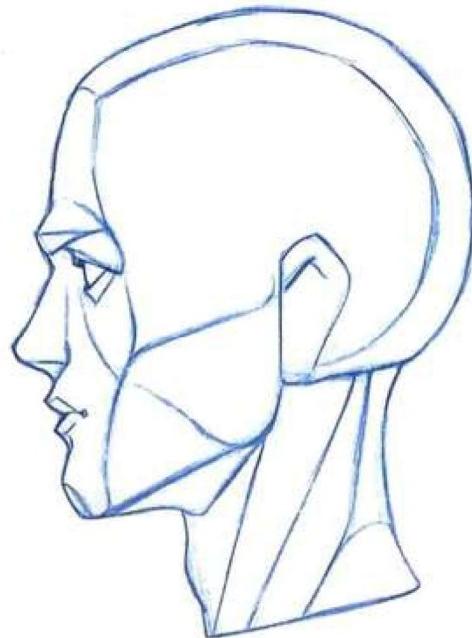
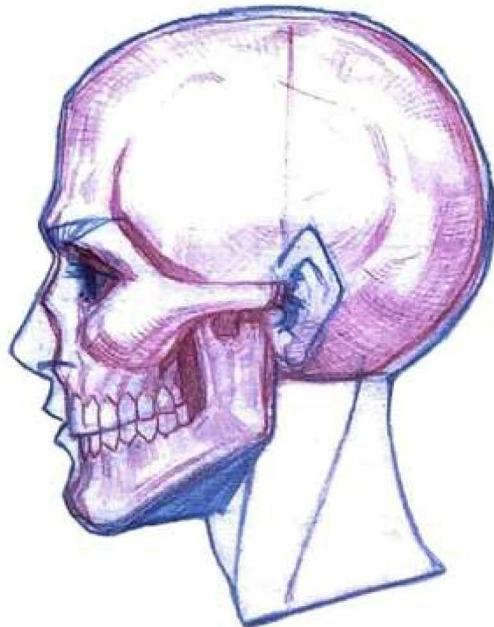
• The older you get, the more fat you lose in your body. As a result, the contours of the facial bones are prominent and wrinkles are formed. The skin that loses fat droops the eyelids and earlobes, making the eyes smaller and the ears longer. In addition, bone density is lowered, resulting in overall bone deformation. On the face, the cartilage of the nose sinks down, making the nose longer and curved like a hooked nose (Figures 5 and 6).

## 2 skull

You need to know the skull to know where it bends

The skull (skull) has a spherical shape as a whole, but it is not completely round like a ball, but in the form of an ellipse elongated from front to back. The place where the bone is touched is the point where the angle is bent, and there are representative eyebrow arches and cheekbones that protect the eyes. The light and dark areas are divided along the flow of the skeleton.





## Q&A



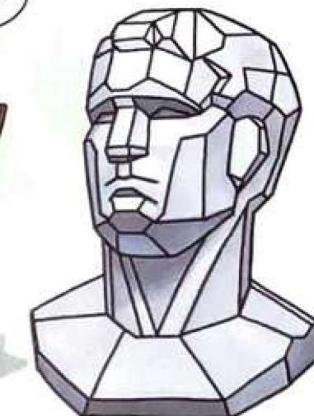
There are no sharp edges on the face, so why study each side?



It is difficult to understand the three-dimensional effect if you approach the face only with a round face. So when I need to add light and shade or draw various angles, I end up evasive about the shape. Sectioning is effective for structurally and clearly understanding complex shapes. Divide the face by omitting fine bends and grouping similar areas together. After catching the big flow, I gradually cut the angle to make a real face.

### Understanding the form

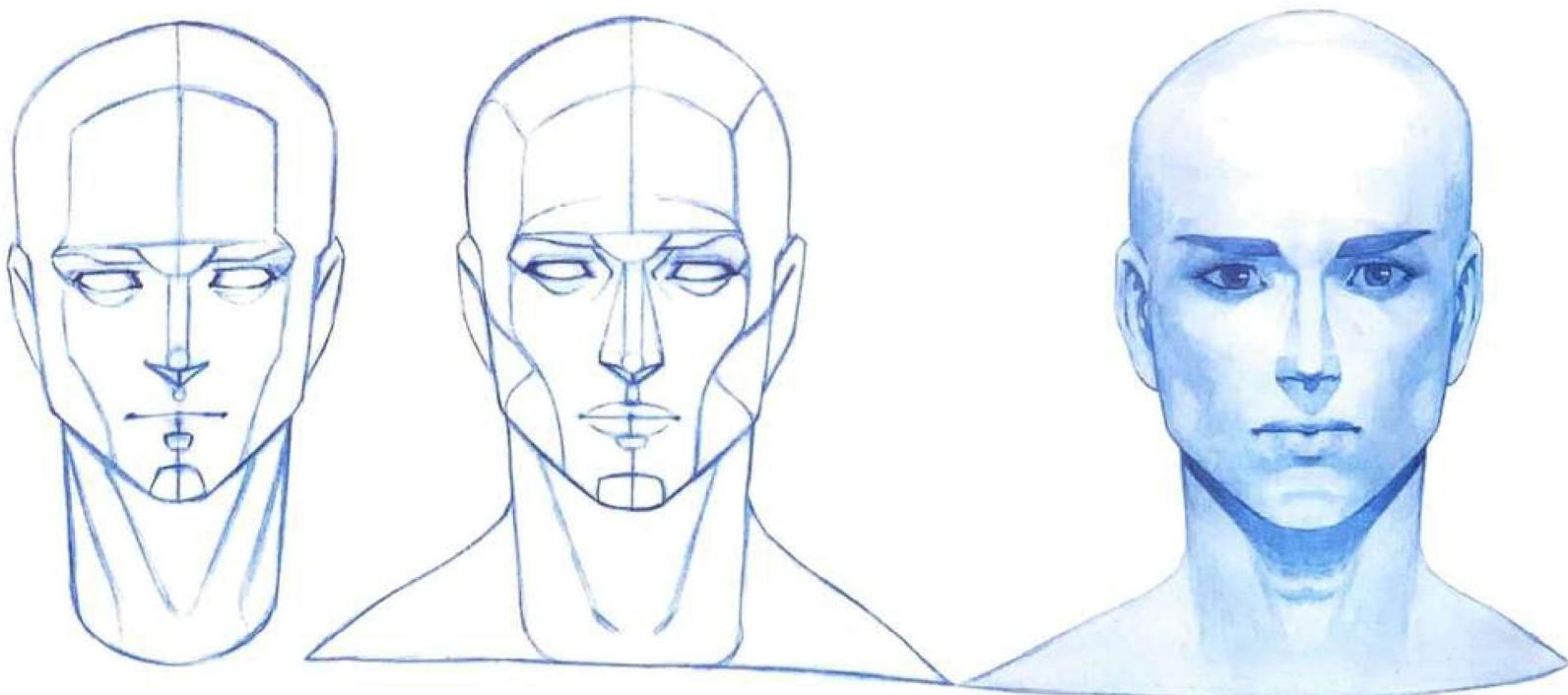
structurally as if learning from each side  
of the plaster statue in basic painting!

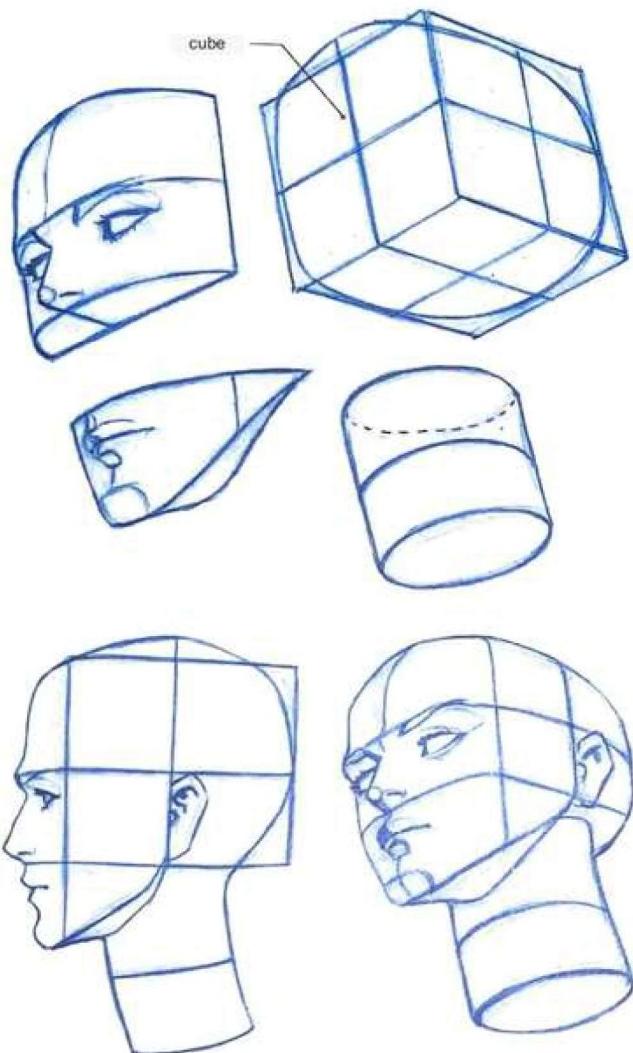


### order of facets

First of all, let's find out the basic structure of the face by dividing the face into front and side parts after setting the exact position of the eyes, nose, and mouth. Based on the front and side, the face is subdivided along the detailed muscle flow.

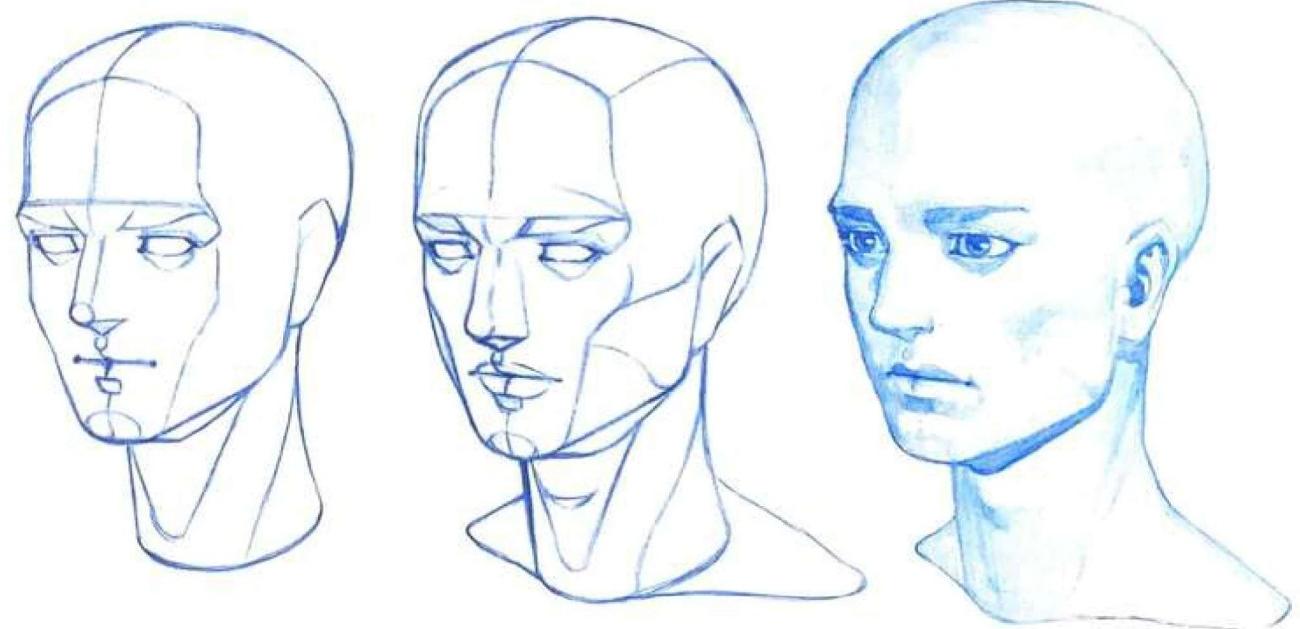
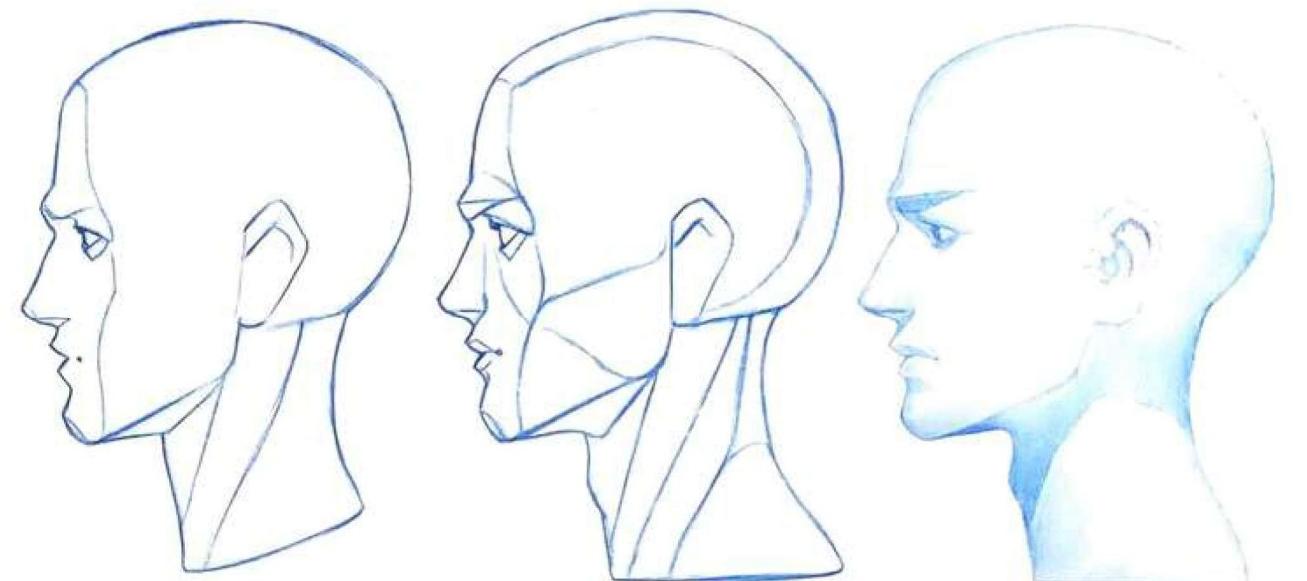
There are many areas that are split around the cheekbones, eyebrow arch, and nose.



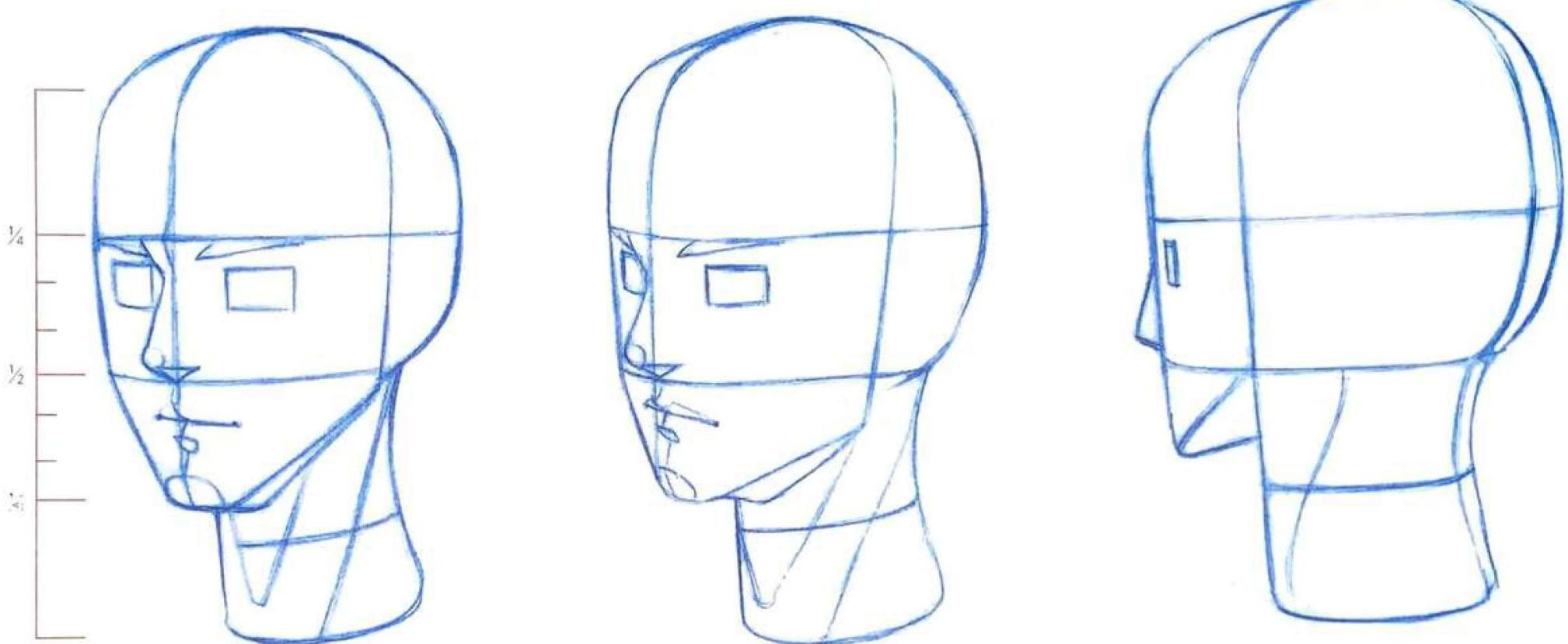


Thinking of dividing the face shape

It is easier to understand the structure if  
you divide the face shape into four parts centering  
on the head made of cubes.



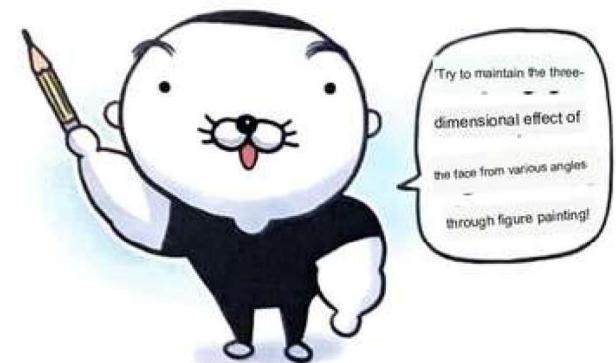
#### 4 Easy to understand face with shape drawing

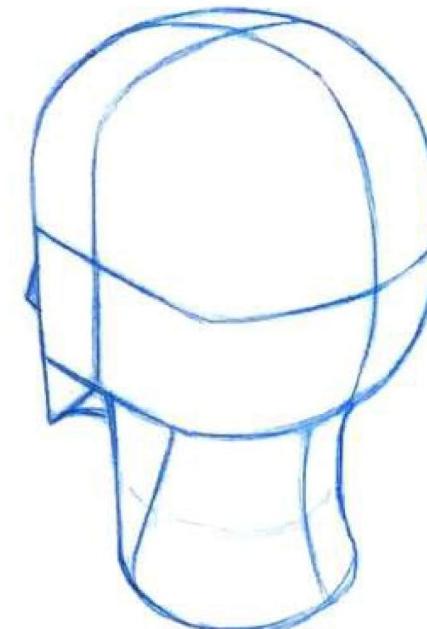
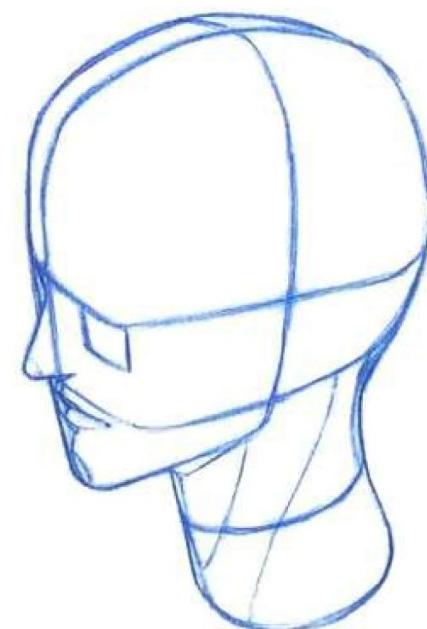
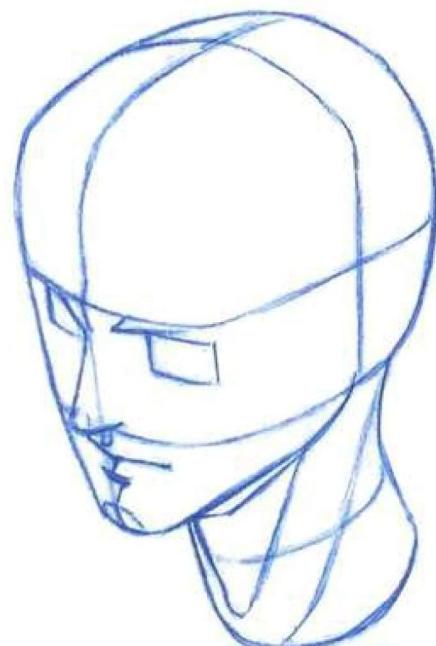
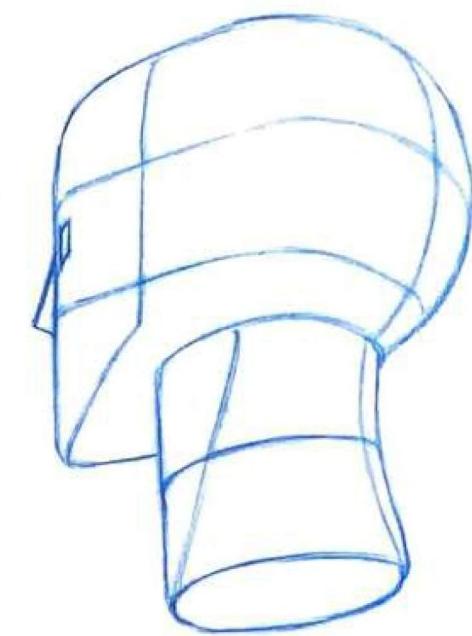
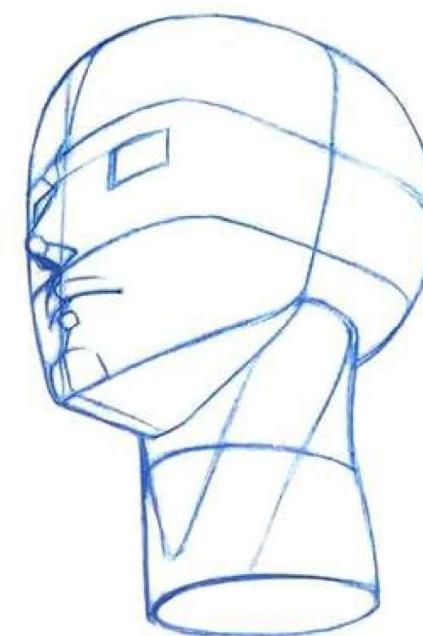
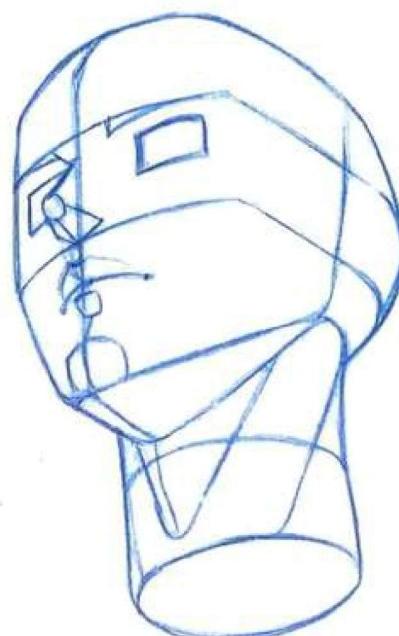
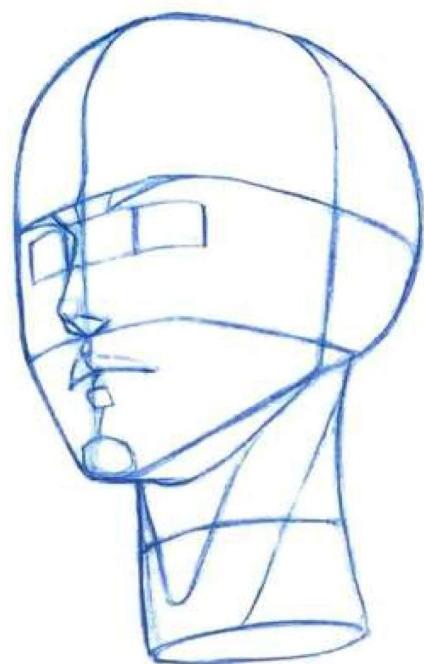


Simplifying the shape of the head by focusing on volume

Just as I did with the bulky torso when drawing the whole body, I draw the bulky head first for the face. Place proportional lines horizontally at the eyebrows and nose, and draw vertical center lines on the front and side of the face. These lines serve as guides for drawing, recognizing exactly which angle the face is facing. If the shape of the eyes is square, it is easy to measure the symmetrical position of the eyes, the tilt of the eyes, and the length of the eyes when the face is rotated.

Practice figure drawing while observing how the proportions and inclination change depending on the various angles of the face.

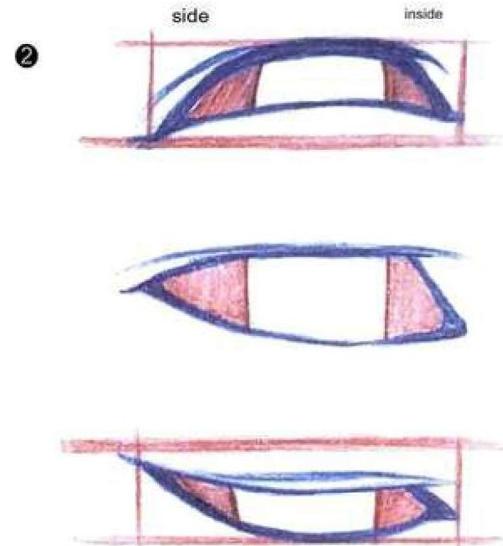
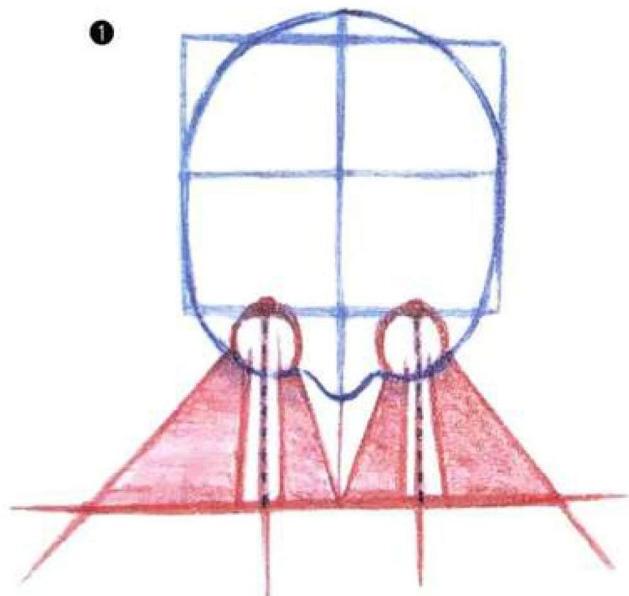




## 5 Shapes of eyes, mouth and nose

### ■ Understanding the eye three-dimensionally

Humans are the only species with wide eye whites. Animals are at a disadvantage in survival because they can easily see where they are staring if their whites are clear. When hunting, your opponent can read your inattention, your emotional agitation, and the direction you're moving. On the other hand, humans have come to have wide white eyes in order to take that risk and communicate by exchanging glances in group life.

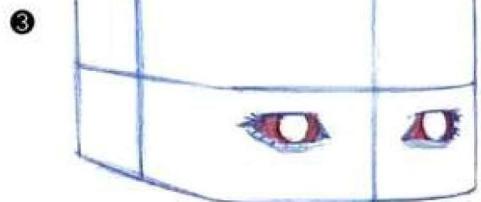
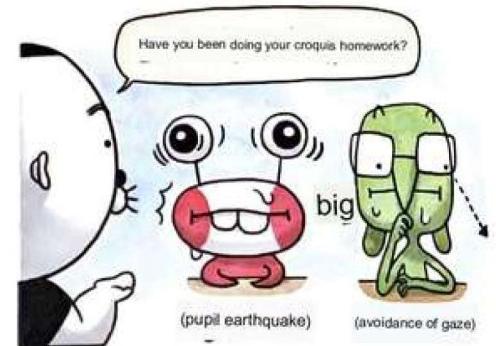


- Since the nose is blocking the eyes, the angle of view does not need to be wide inward, so the tails of the eyes are torn laterally.

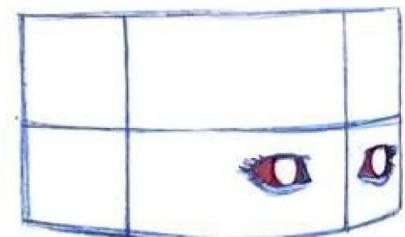
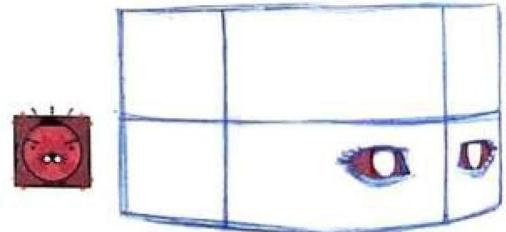
② The eyelids cover the spherical eyeball, so it looks like a crescent moon when viewed from above or below.

The point here is that the inner and outer sides of the eyes should be drawn asymmetrically due to the outer corner of the eyes.

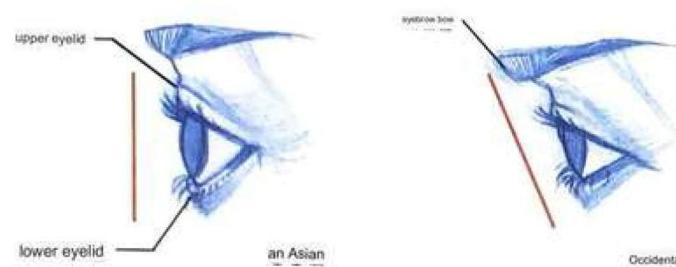
- ③ When the angle of the face is changed, the lateral corner of the eye of the opposite eye turns to the opposite side, shortening the width of the eye. Be careful not to draw both eyes symmetrically from an angle that is not completely frontal.



Incorrect answer note Shape of both eyes on the half side

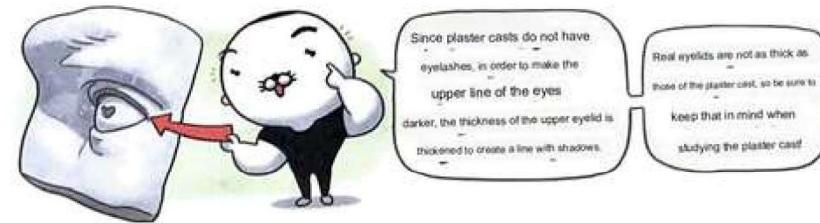


If the area of the white eye is drawn symmetrically, it will come together like a cross-eye, and the eyeball will look flat.

eye of the east

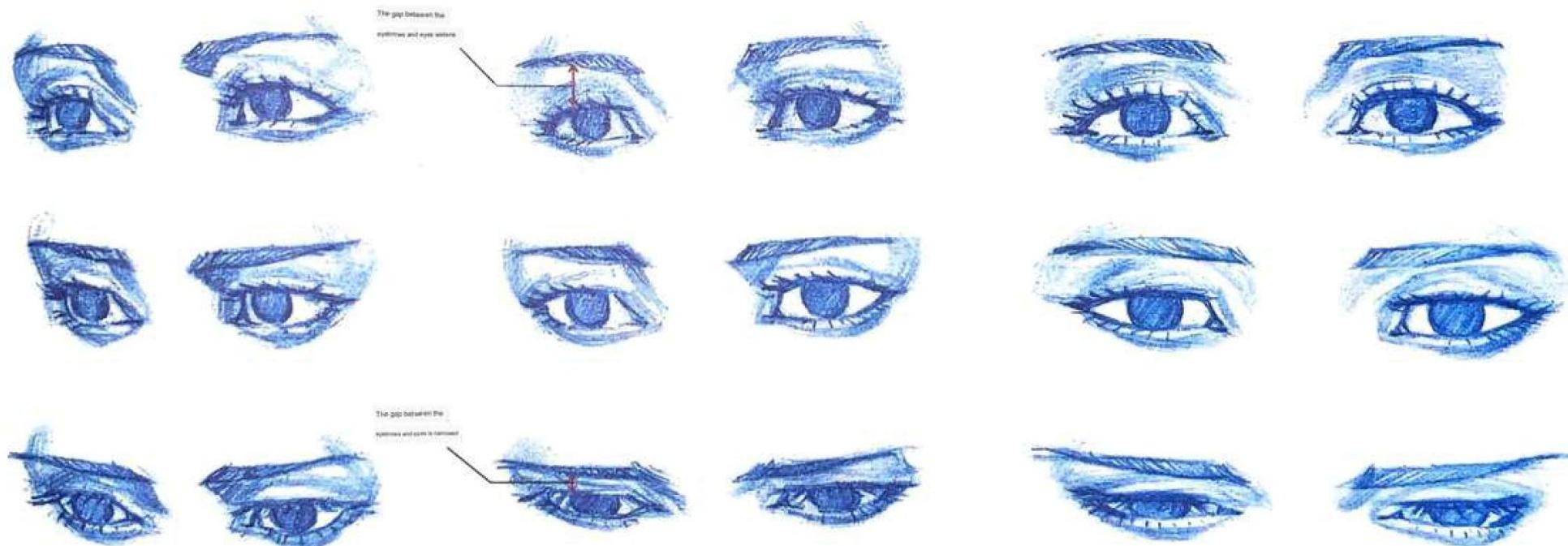
In Asians, the angle between the upper and lower eyelids is perpendicular.

For Westerners, the eyebrow arch should protrude and be drawn with an oblique angle.

Characteristics of eyes according to angle

Looking up from below, the distance between the eyebrows and eyes widens. Since the thickness of the eyelids varies depending on the viewing angle, the flow of the eyelids covering the eyeball must be carefully studied.

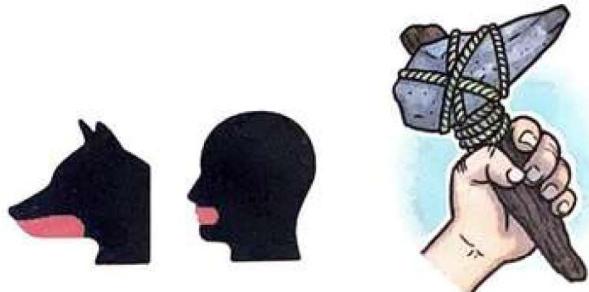
When viewed from above, the distance between the eyebrows and the eyes is shortened, and the eyelashes cover the eyes. Be careful not to darken the lower lashes.



■ Why does the mouth look like this?

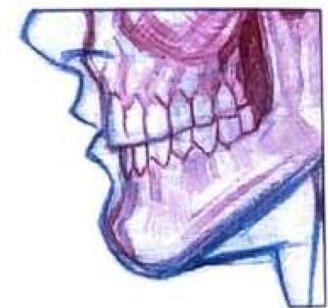
#### Why is the human mouth small?

As humans began to use their hands, their snouts became shorter as they no longer needed to bite their prey, and as they stored food and did not have to eat large amounts at one time, their mouths became smaller. The lips are the part that releases body heat, and they are thick because they have enough flesh to open the mouth. An important point in understanding the shape of the mouth is the structure in which the lips are rounded along the top of the teeth, which are curved like a horse's hoof.



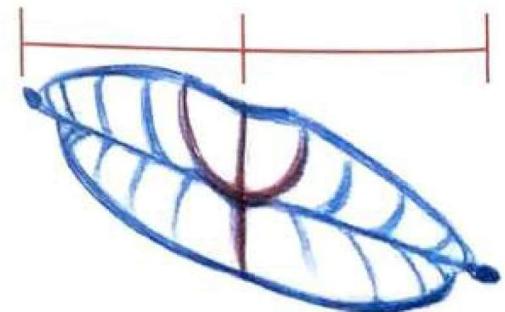
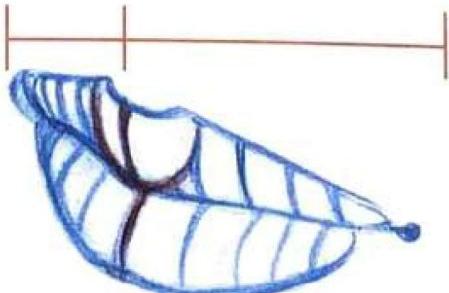
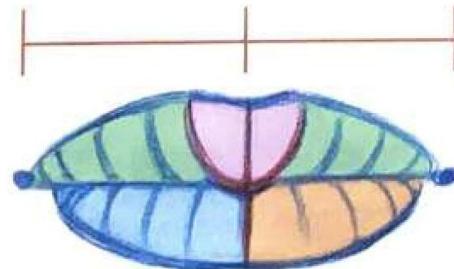
#### upper and lower lips

Why does the upper lip protrude more forward than the lower lip? This is not because the upper lip is thicker, but because of the way the upper teeth cover the lower teeth. Occasionally, when the lower teeth cover the upper teeth due to malocclusion, the lower lip also protrudes more than the upper lip. For reference, the reason why the front teeth are visible when the lips are slightly parted is because the position where the lips meet is in the center of the upper teeth.



Incorrect answer note The structure of the lips

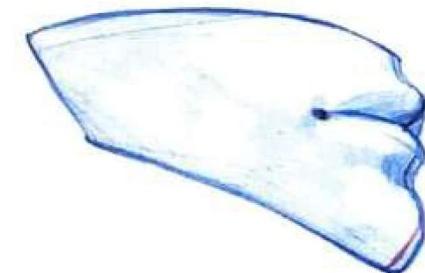
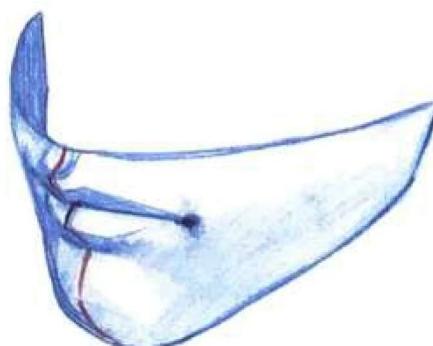
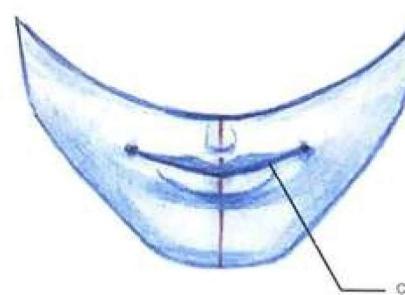
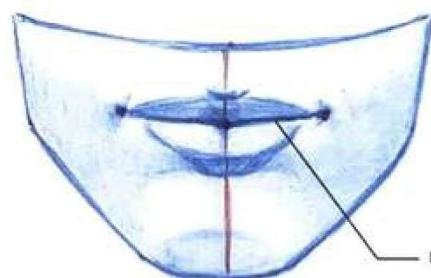
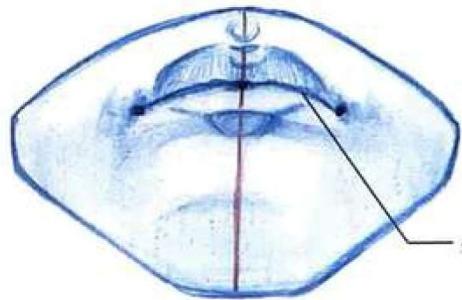
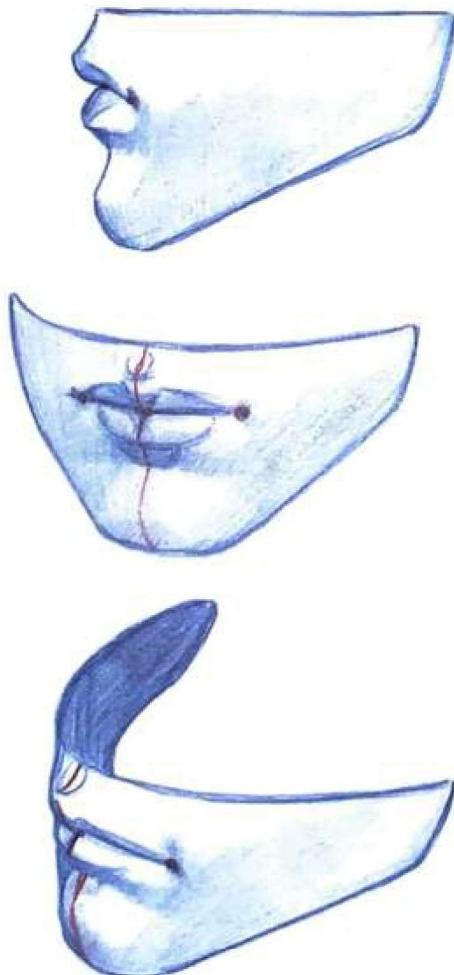
The shape of the lips can be largely divided into two parts: the protruding part in the middle of the upper lip, the part on both sides, and the lower lip. If you express the closed line of the mouth in a straight line like the wrong answer picture or put the convex part of the lips in the center, the mouth will be flat and flat.



"Let's carefully observe the points that change depending on the angle."



Curved flow of the center line  
Positional change of the center of the mouth and both ends of the mouth



Different lip shapes depending on the angle

A: Looking up from below, the A line follows the shape.

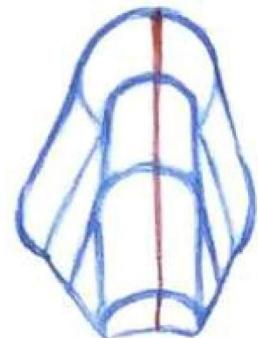
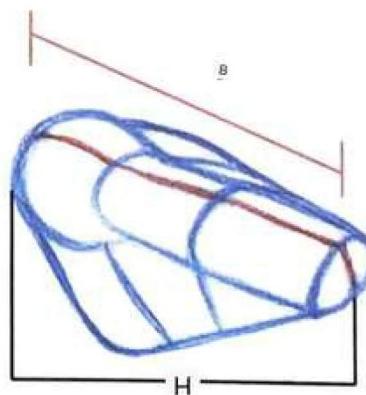
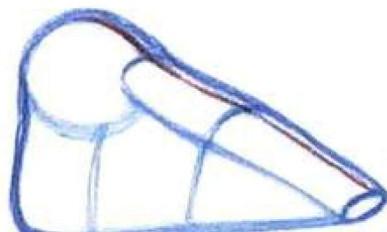
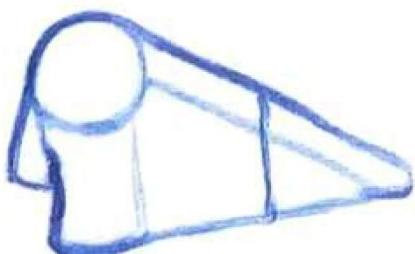
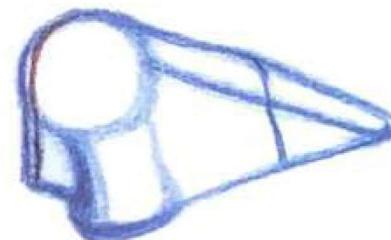
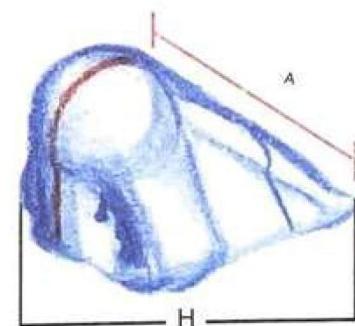
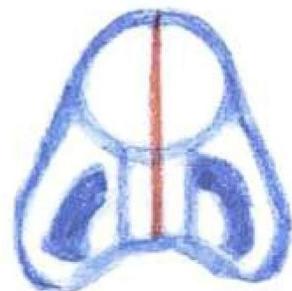
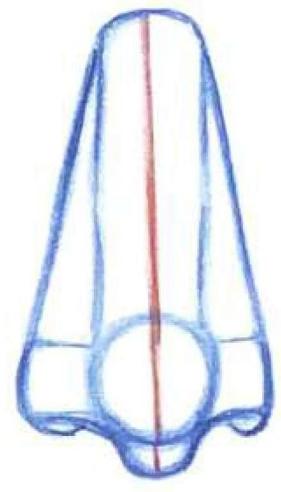
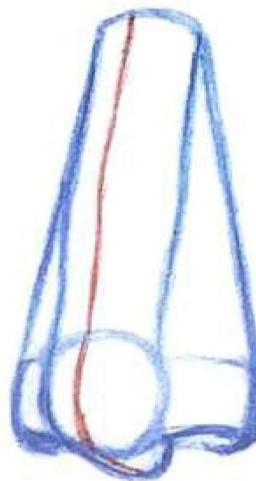
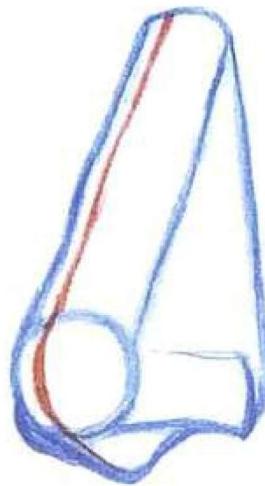
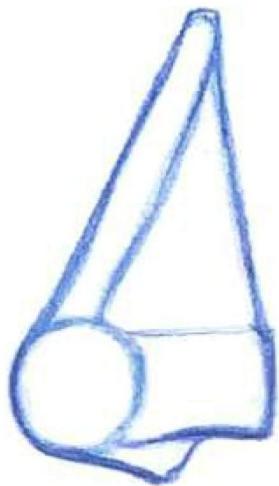
B: When the mouth is closed, the upper and lower lips are It is a line that touches.

C: When viewed from above, the shape of the upper lip A line follows.

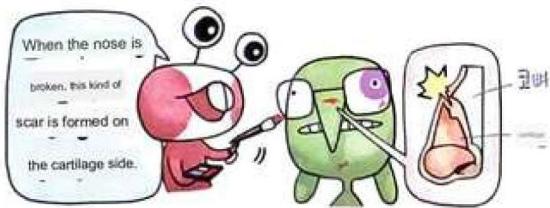
From now on, I will give my lips a three-dimensional effect!



■ Split the face to understand the nose

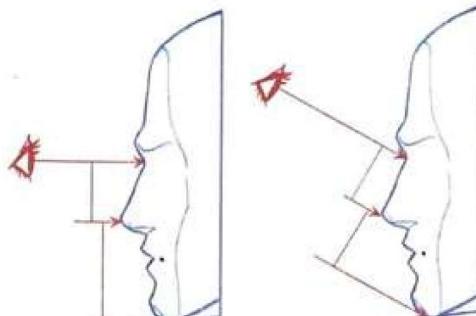


The nose, which rises the highest on the face, is a part that stands out for its three-dimensional effect. Since it is at the center of the face, it serves as a reference line to determine the direction of the face. As shown in A on the left page, at a low angle, the bottom of the nose is visible and the length of the bridge of the nose is shortened. Like B, in the case of a high angle, the length of the bridge of the nose is not shortened due to the sloping characteristic, resulting in a long appearance. Let's take a closer look through the picture.

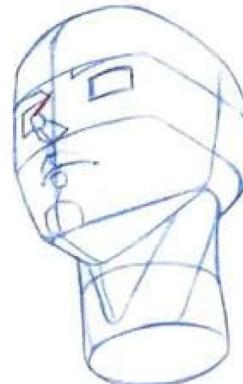


#### Changes in the length of the nose according to the angle

At an angle looking at the face horizontally, the length of the nose looks shorter than the length from the tip of the nose to the tip of the chin, but in a high angle, the length of the nose and the length from the tip of the nose to the tip of the chin appear almost the same. If you look at the face from a high angle like this, you can observe that the length of the nose is relatively long.



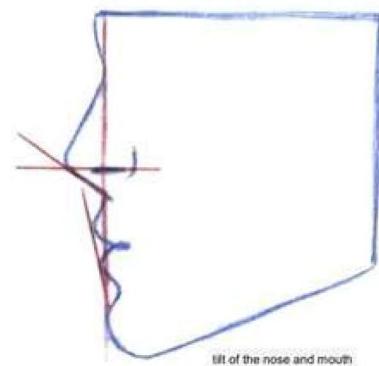
high angle



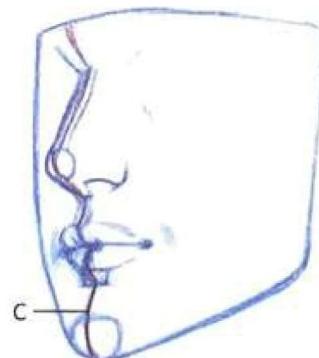
Shortened low-angle nose



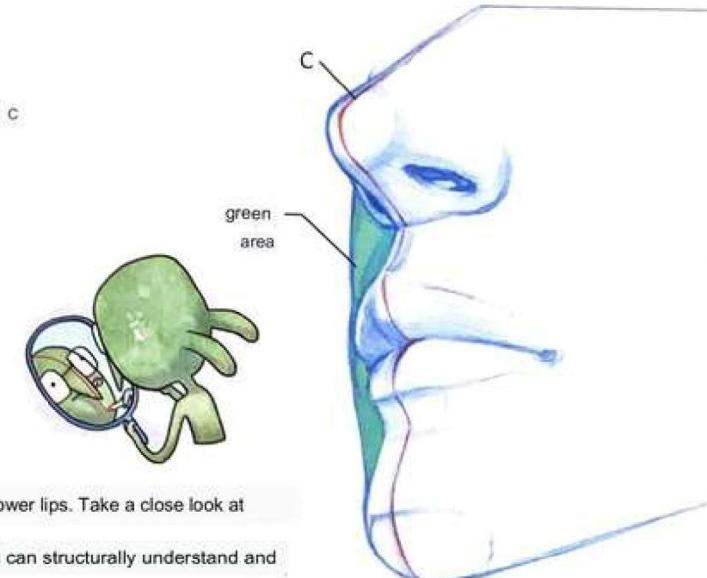
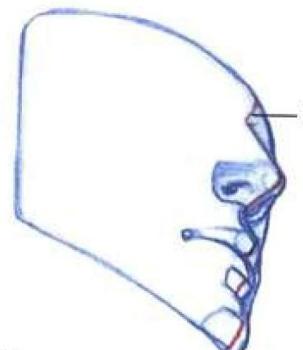
High-angle nose with no shortening



tilt of the nose and mouth



nose and mouth flow



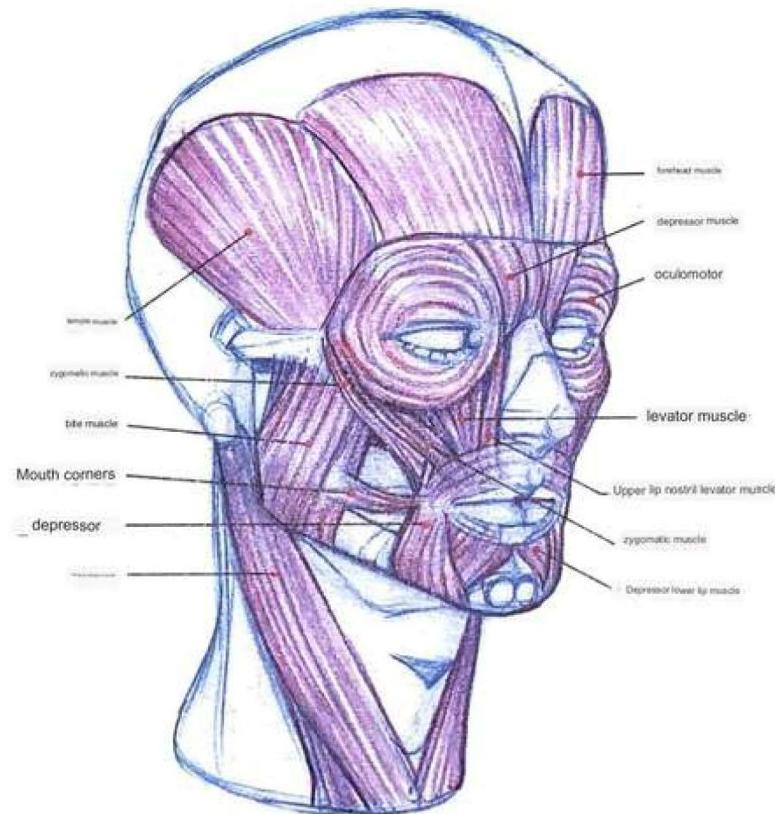
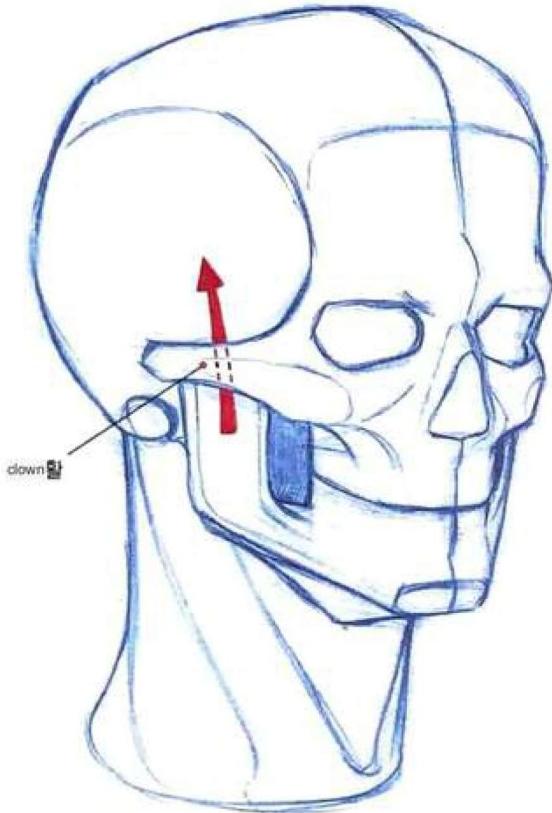
#### connection between nose and mouth

Understand the shape by comparing the inclination of the nostrils, the inclination of the underside of the nose, and the inclination of the upper and lower lips. Take a close look at the flow of the hill created by the combination of the nose and lips through C, the central line of the face. When drawing a half-side face, if you can structurally understand and express the green area beyond this most protruding part of the face, you have a high level of understanding of the face structure!

The angle of the face where the flow of the nose and mouth and the opposite cheek are separated by a line

## 6 Facial muscles and expressions

- Why are there so many muscles in the face?

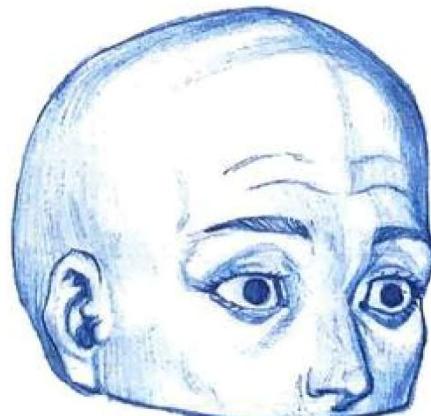
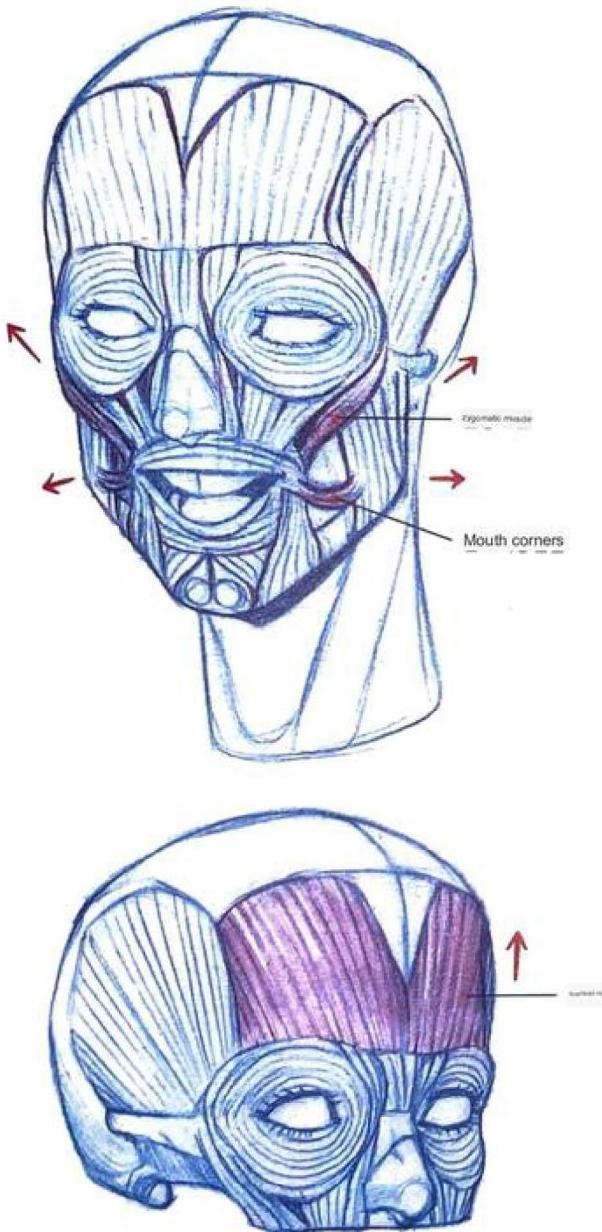


### muscles of the face

The empty space between the zygomatic arch and the skull, which runs from the cheekbones to the ears, creates a passage for the muscles on the side of the forehead to the lower jaw. Also, by looking at the grain direction of muscle fibers, you can tell in which direction the muscle contracts, so you can predict the use of the muscle. Many muscles are connected to the corner of the mouth, so the corner of the mouth rises thickly. The muscles related to expressions are not attached from bone to bone, but from bone to skin, so the skin is pulled to create facial expressions. The attachment of muscles from bones to skin is a characteristic that can only be seen on the face.



■ Features of a smiling face



muscles used when laughing

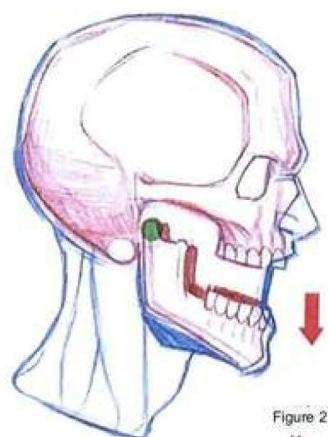
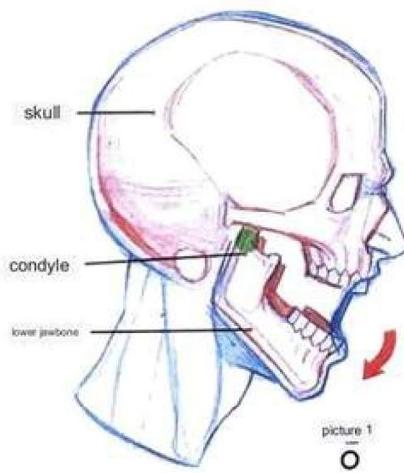
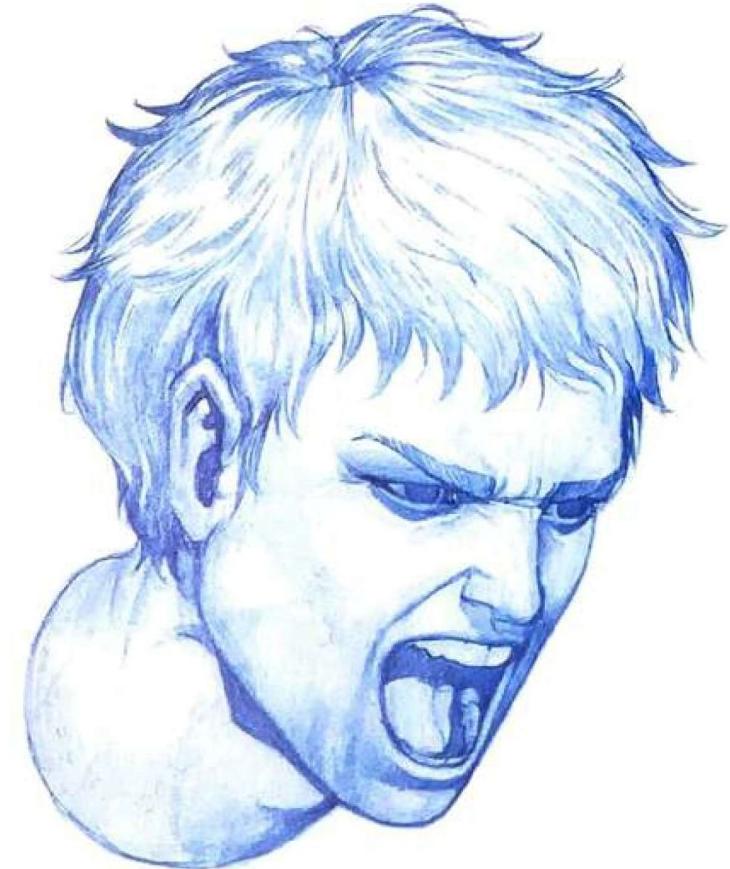
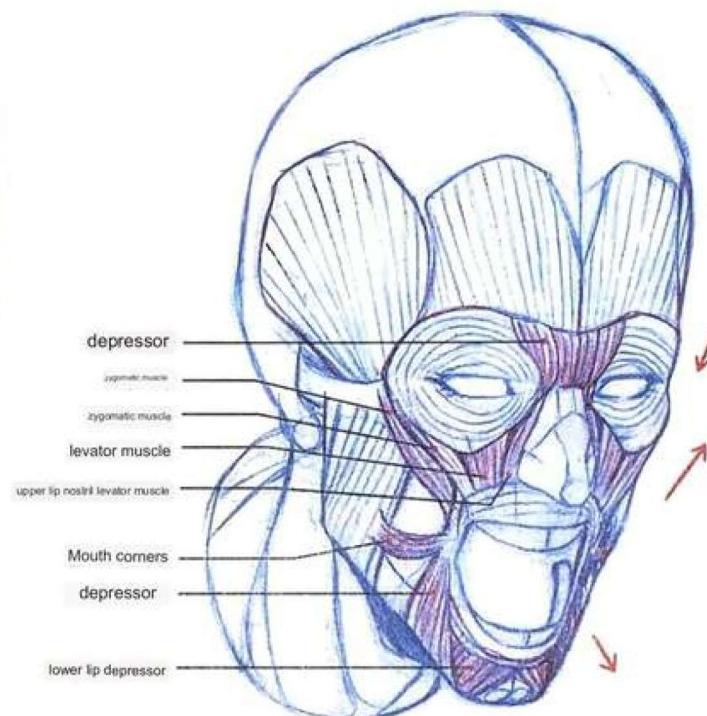
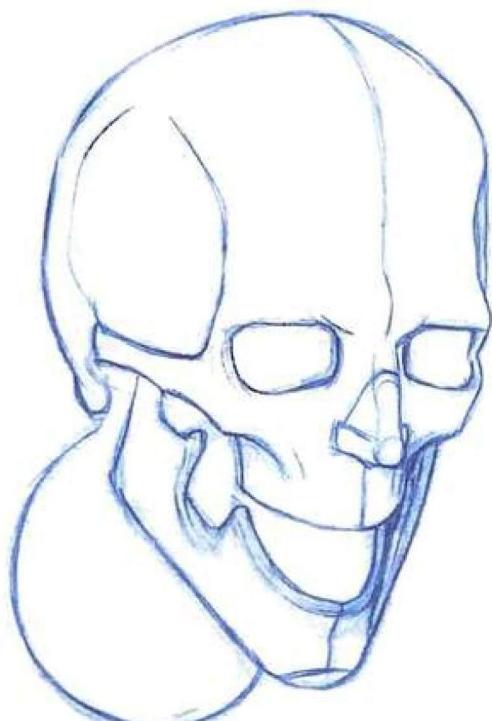
The muscles that are typically moved when smiling are the zygomatic muscle and the puller of the mouth tail. The reason why the nasolabial folds form and the cheekbones protrude convexly is because the fat is pushed. The clown's flesh pushed up also affects the eyes, creating half-moon-shaped eyes. When smiling, it is natural for only the upper teeth to be visible. When the lower teeth are visible, it is easy to give the impression of a fake smile or to be seen as a maniac smile.



The forehead muscle that raises the eyebrows

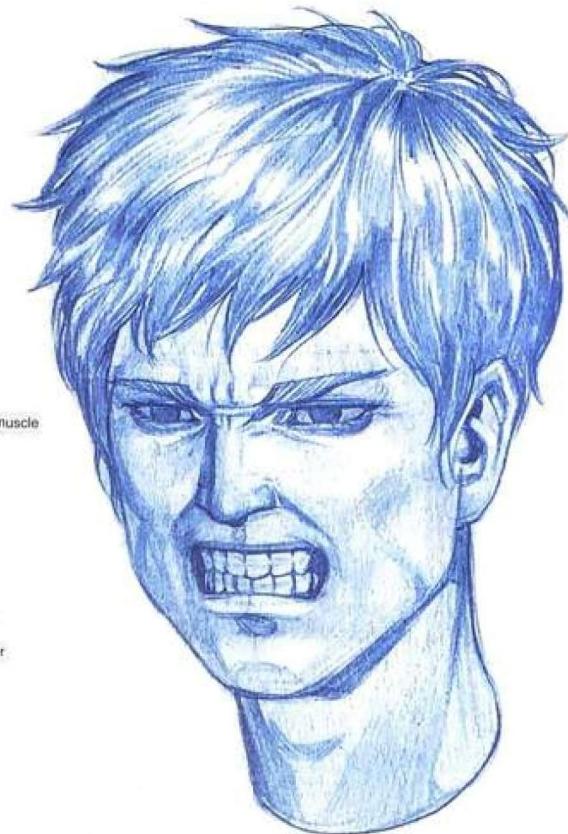
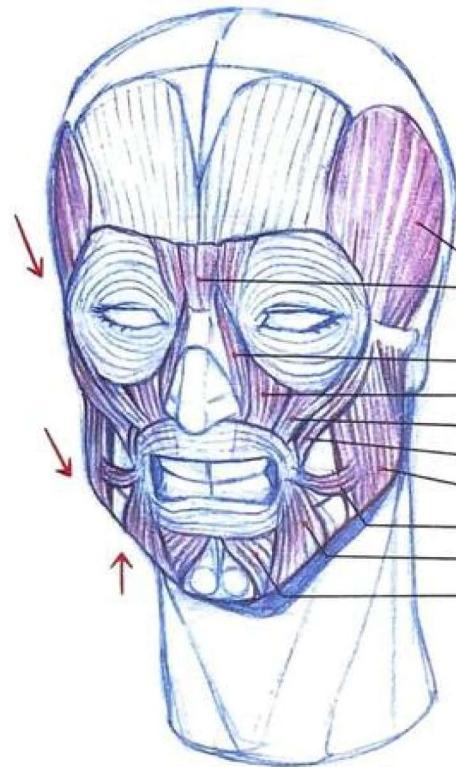
If you look at the elderly, you won't find anyone without wrinkles on their foreheads. You can see that since we are young, we make a lot of facial expressions with raised eyebrows. With a little awareness, you can see that the forehead muscles are used not only when looking up at something or making a surprised expression, but also in various facial expressions. Wrinkles on the forehead are caused by the contraction of the forehead muscles and overlapping of excess skin. Even now, you are probably unconsciously contracting your forehead muscles.

■ Characteristics of an angry face

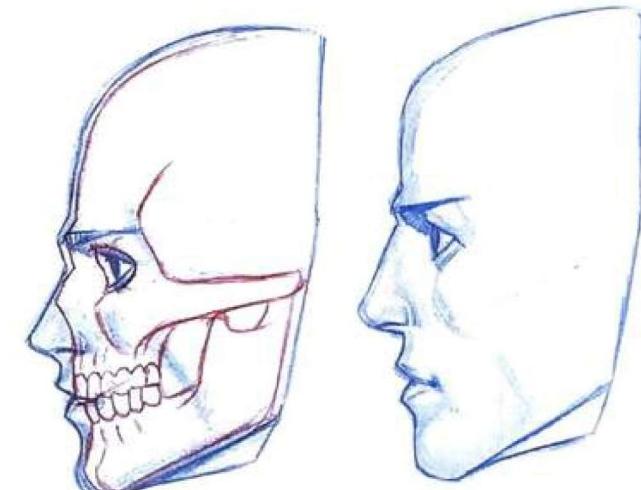


#### shouting expression

A frowning, yelling expression uses more muscles than a smiling face. The point of this expression is the movement of the temporomandibular joint. As shown in Figure 1, when the mouth opens, the lower jawbone should draw a curve around the articular process. However, many students often make the mistake of opening their mouth vertically rather than in a curved motion as shown in Figure 2. The anatomy of the bone suggests that this is an impossible movement, as vertical opening of the mouth causes the temporomandibular joint to fall out. Keep in mind that the articular process is the joint that connects the skull and the lower jaw, so it should not be dislocated.



This is the most muscled expression out of all the ones I've seen so far. This expression of threatening the opponent by exposing the teeth while biting the molars tightly is also observed in other animals. The reason why all animals have more strength to close their mouths than to open them is to bite prey or chew food. As a result, the amount of muscle that closes the mouth is far greater than the amount of muscle that opens the mouth. As you can see from the expression above, you can see that when the mouth is closed, it feels more threatening than when the mouth is open. The muscle that closes the mouth is divided into the temporal muscle and the masseter muscle. The temporal muscle has the endurance to close the mouth lightly, and the masseter muscle exerts strong muscle strength when chewing something hard.



If you bite your teeth hard, the masseter muscle will stand out.



<Weak Jaw Movement>

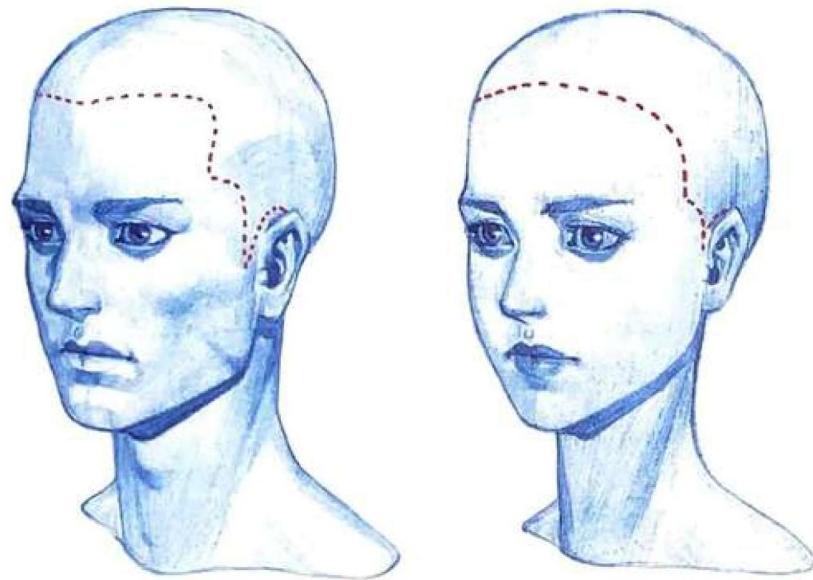


<Strong Jaw Exercise> Temporal

Temporal contraction

muscle + Masseter muscle contraction

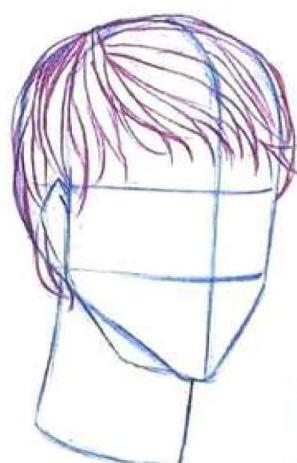
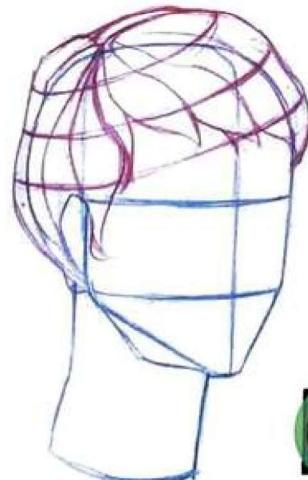
## 7 natural hairstyles



When drawing the head, be aware of the shape of the head and draw the volume of the hair to avoid the mistake of drawing the hair into the head or overly floating. The line where the hair starts is also different for men and women. Men have an angular M-shape, and women have a round border. When expressing the hair, do not draw it as if planting it one by one, but hold the entire hair in a large lump and divide it into smaller strands toward the end. It's because the hair is tied up in a bunch and overlaps. Bundles of hair extend from the whorl or part to create a regular direction.

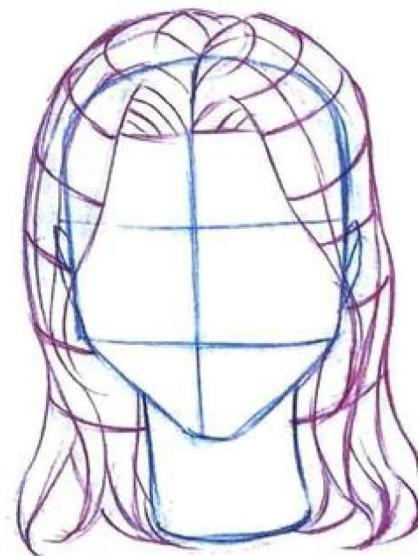
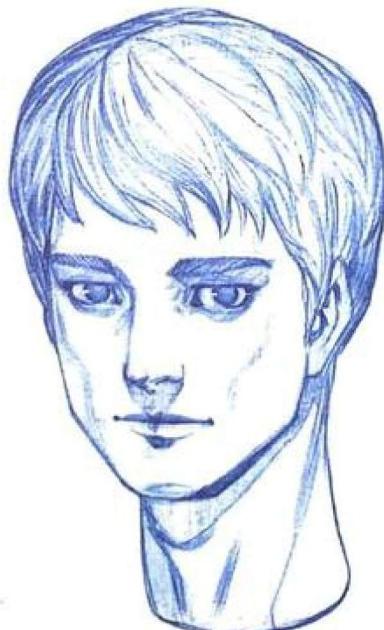
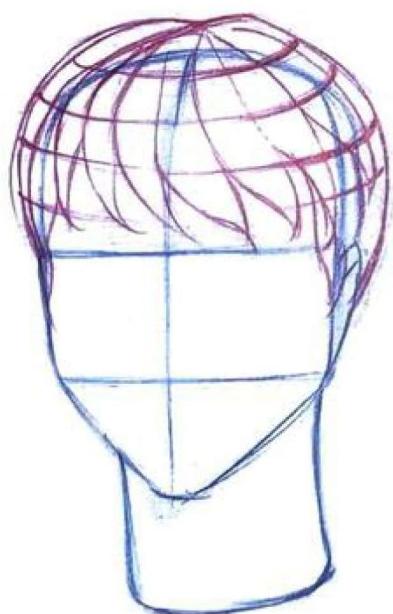
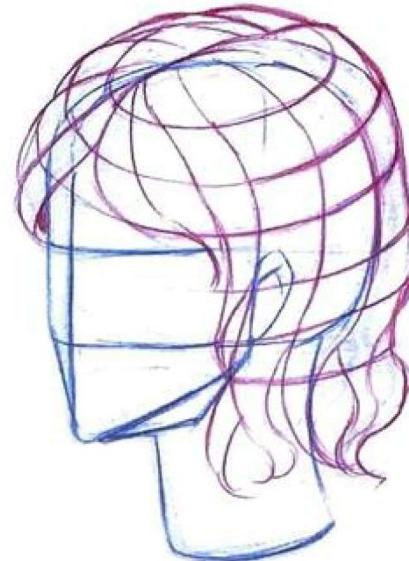
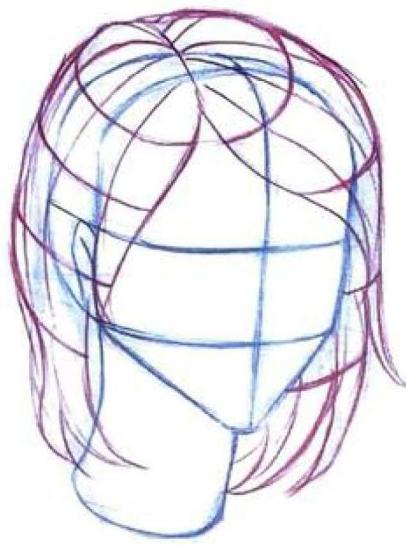


Incorrect answer note Volume and direction of hair



Since the hair is layered and piled up on top of the head, we need to add volume to it. If you draw it right along the skull line, it will look thin and sparse. As for the direction of the hair, it is necessary to draw a large flow centered on the hair part or hair part before entering the description. These characteristics are more important for characters with long hair, right?

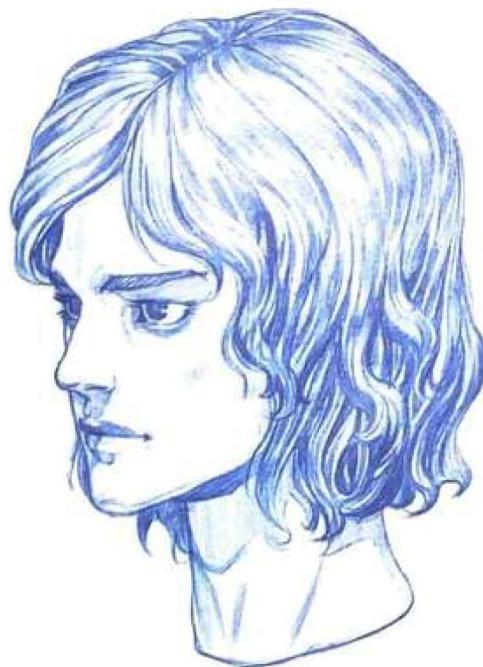




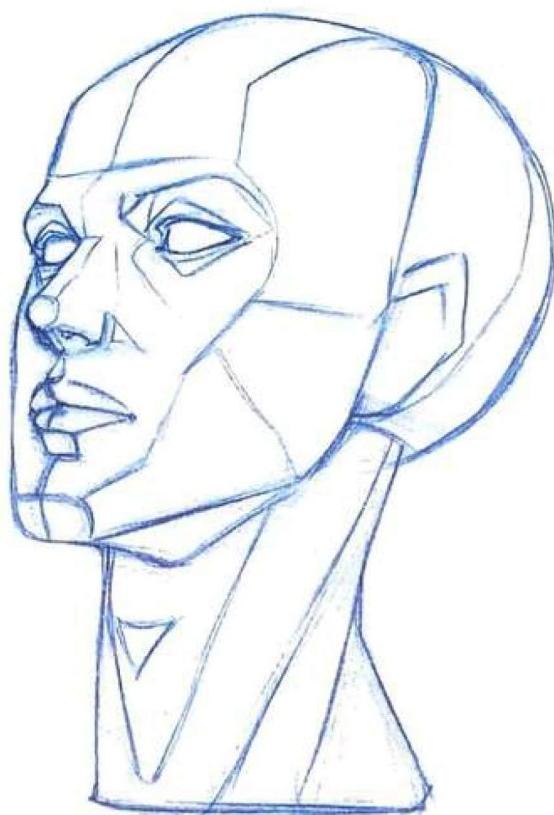
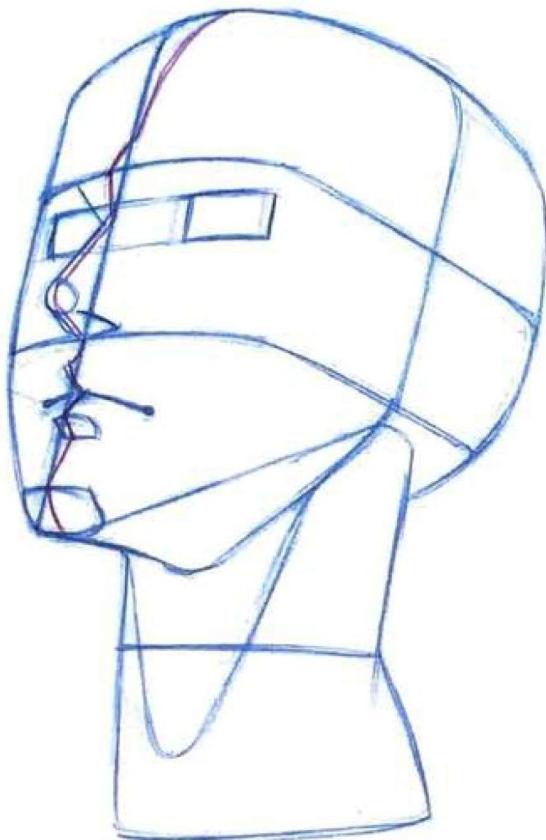
## different hair styles

The location of the whorl and part has the biggest impact on the hairstyle. Depending on the hair length, professional design elements are added, so do not try to create a style with your imagination, but refer to professional hair materials to express a sophisticated style that suits the times.





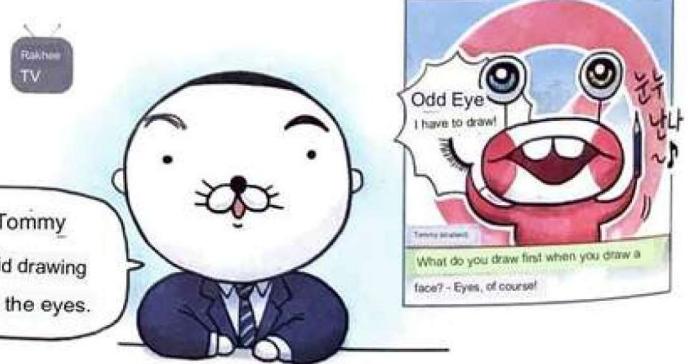
### 3 Rotate various angles

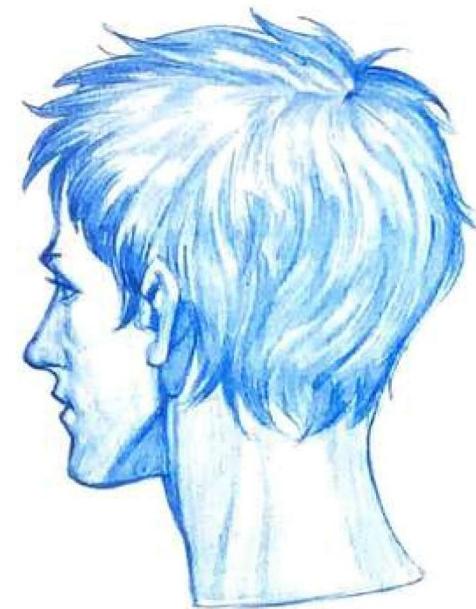
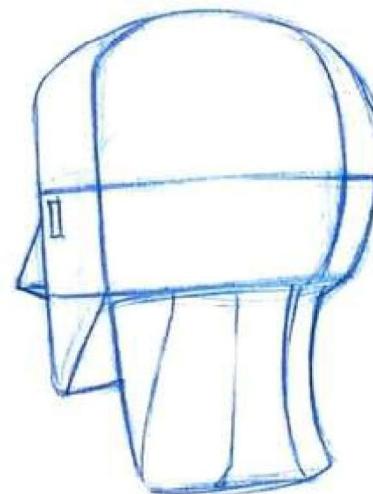
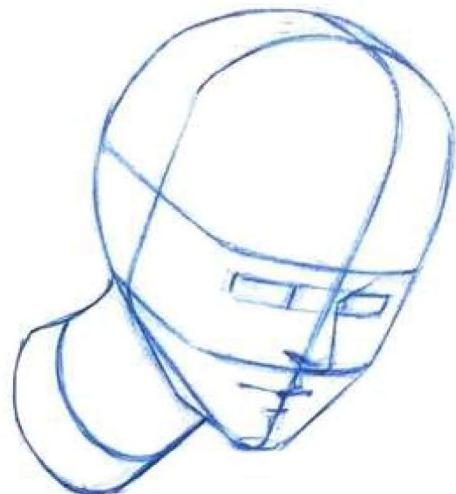
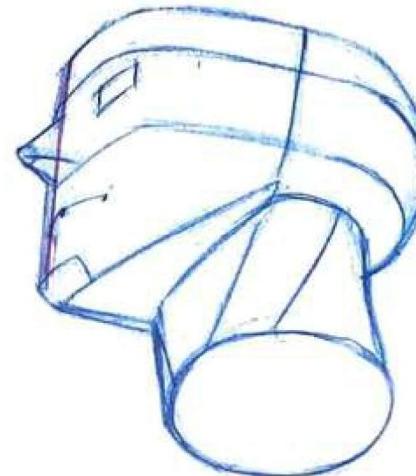
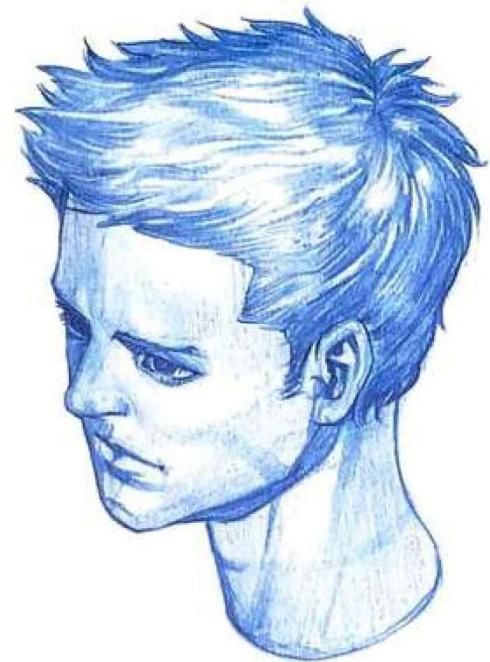
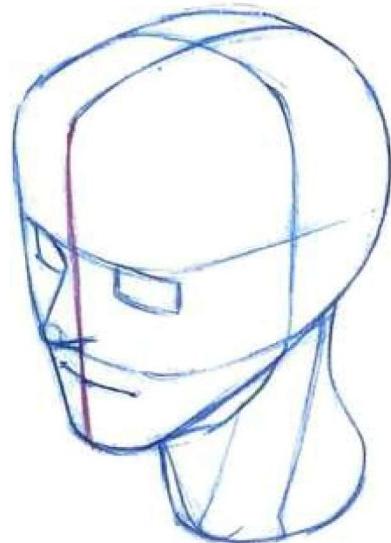


We recognize faces more precisely than other objects. In addition, since the shapes of the eyes, nose, and mouth that make up the face are complex, an understanding of the exact proportions and shapes is required when turning the angle. No matter how accurately you understand the shape of each eye, nose, and mouth, you cannot draw various angles if you lack understanding of other areas of the face. In order to understand the area that connects the eyes, nose, and mouth, it is necessary to go through the figure drawing stage based on the skeleton and develop into individualization. When drawing a face, first determine the direction of the face, draw the overall volume of the head accordingly, and adjust the proportions and positions of the eyes, nose, and mouth according to the angle. In order to include the contrast of the polarized body, it is necessary to understand the flow of the facial skeleton from each side.



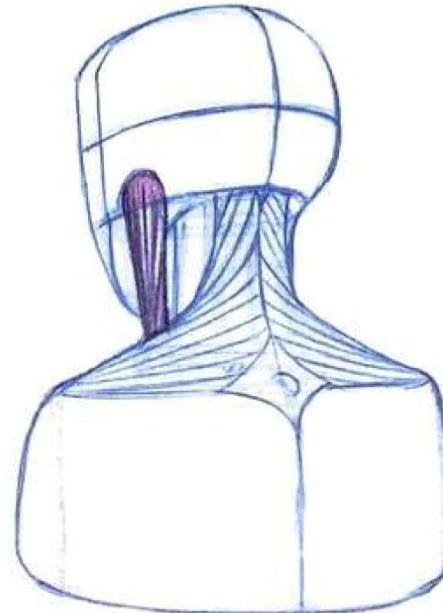
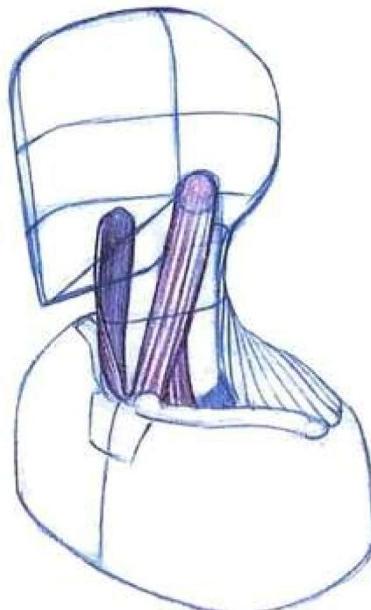
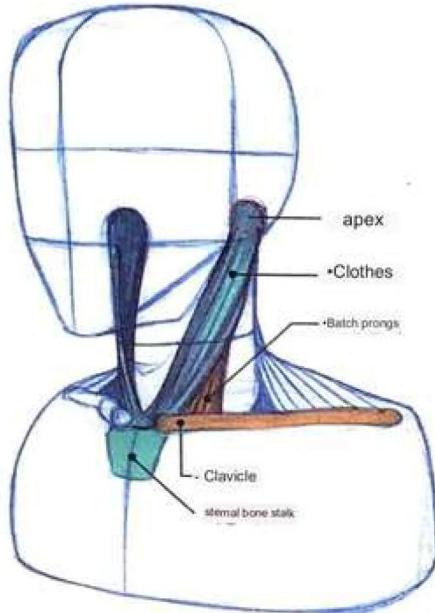
like Tommy  
Avoid drawing  
from the eyes.





## 9 neck muscles and movements

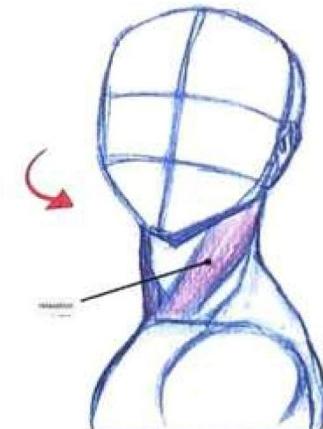
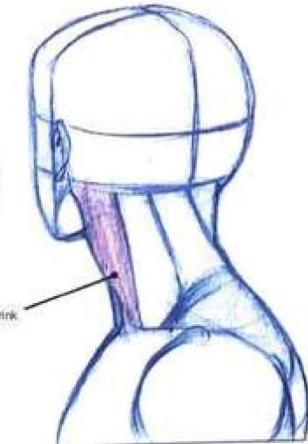
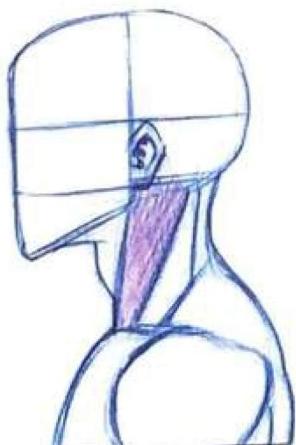
- The most prominent cervical oblique muscle (sternocleidomastoid muscle)



starting point and ending point

Touch the back of the ear once. Are the bones protruding convexly? This is called a 'top turn'. The cervical oblique muscle is divided into the 'collateral fork' that starts from this top process and goes to the sternum and attaches to it, and the 'clavicular fork' that leads to the clavicle.

Look in the mirror and turn your head.



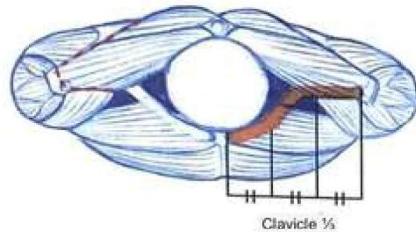
use

It works by turning the head left and right and leaning forward.

characteristic

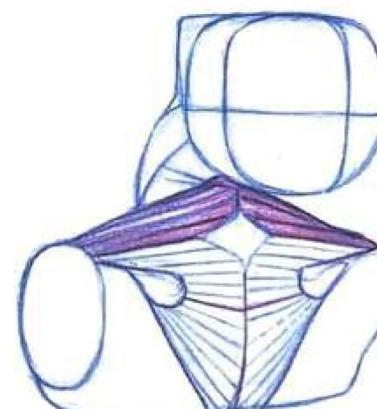
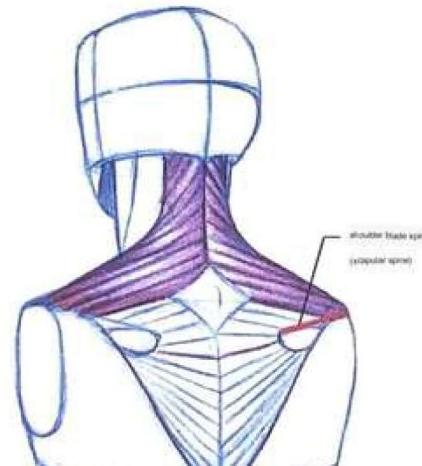
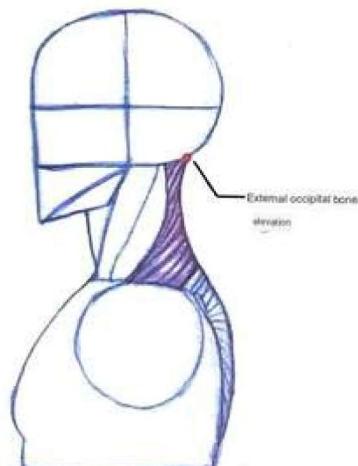
The cervical oblique muscle has the greatest influence on the outline of the neck and has a prominent sense of thickness, so it is an important indicator that cannot be left out when expressing the neck. There are several muscles in the neck besides the cervical oblique muscle, but it is not very visible on the outside, so it is natural to express only the cervical oblique muscle and trapezius muscle and tie the rest into a cylinder.

■ Upper trapezius muscle resembling a bridge (trapezius muscle)



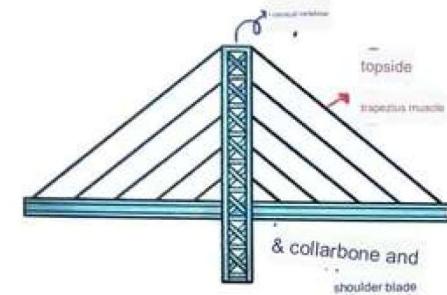
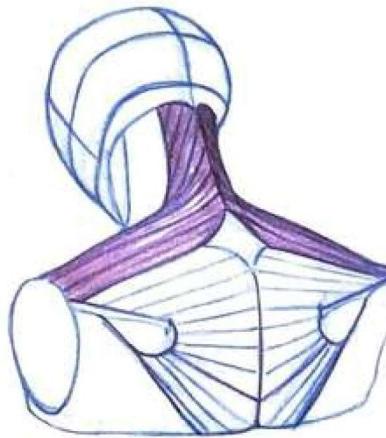
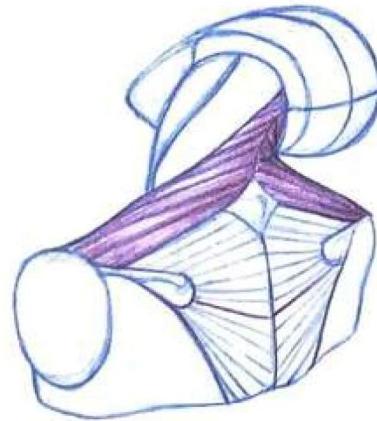
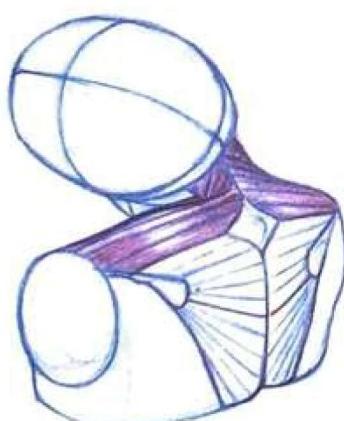
starting point and ending point

The upper trapezius originates from the external occipital eminence and attaches to both scapular spines and the middle branches of the clavicle. We will learn more about the entire trapezoid later.

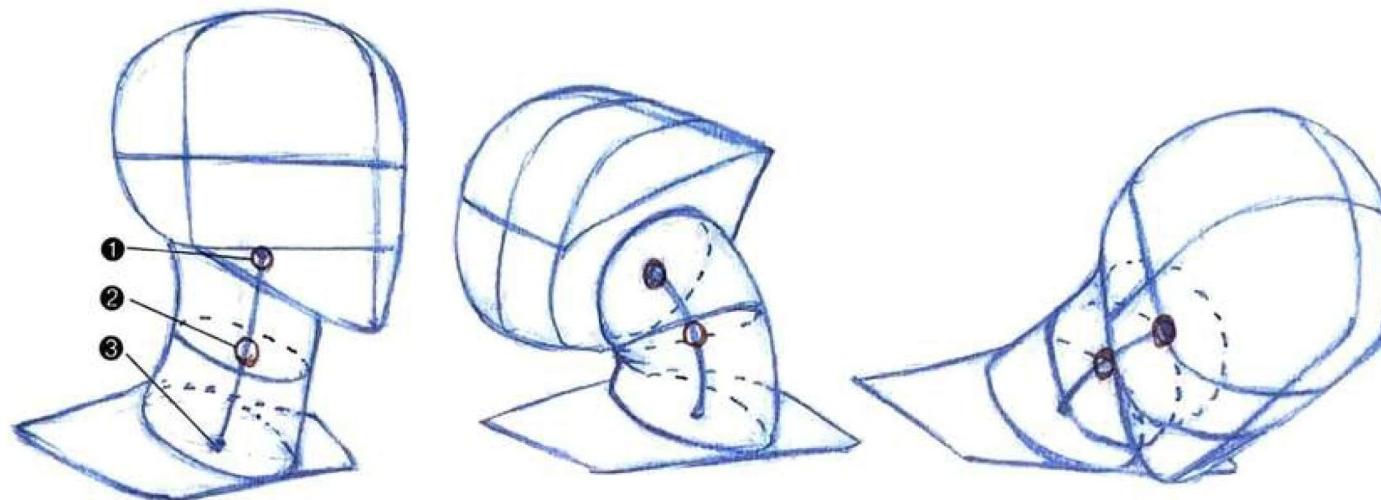


use

The upper trapezius muscle lifts the head, tilts it sideways, and rotates it, and connects the collarbone and scapula to the cervical vertebrae to support the shoulders.

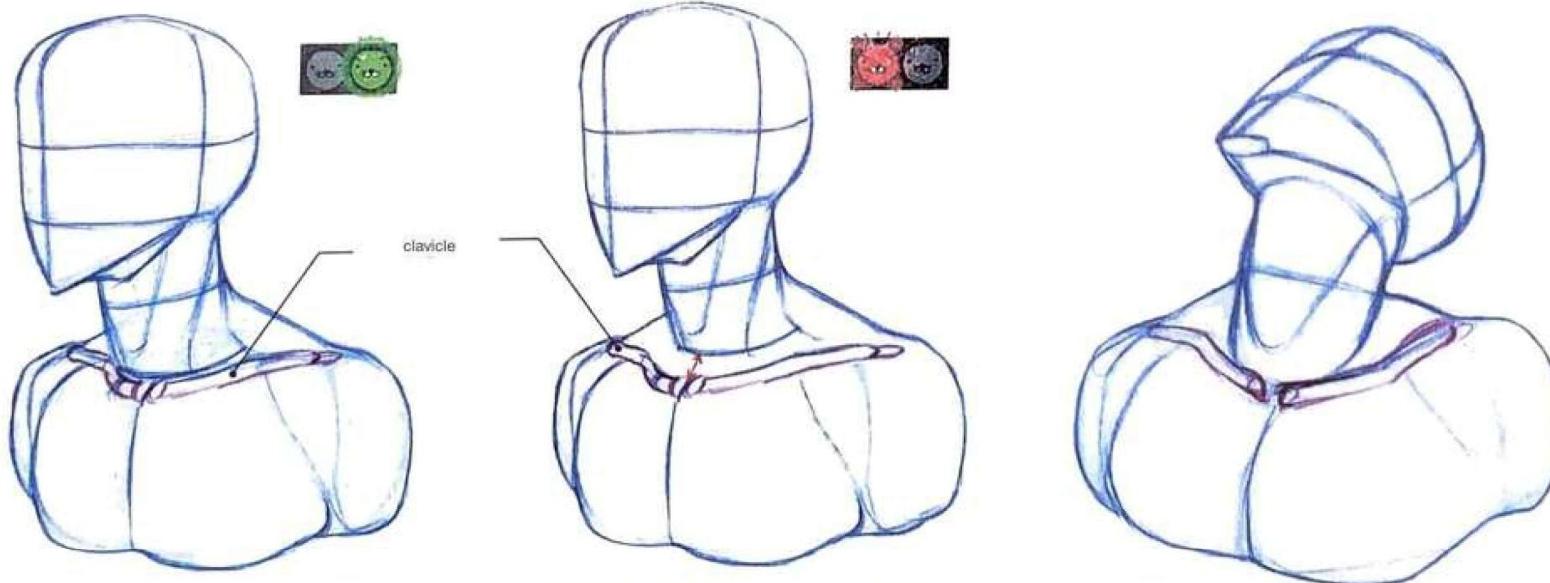


■ Easily understandable neck movements



The joints of the cervical vertebrae are located in the center of the neck. When you lift your neck backwards more than when you lean forward, your neck bends more, and wrinkles form on the nape of your neck. Bending the neck back and forth causes changes in the apparent length, so you should always think about the movement of the neck based on the skeleton, which is the center. When moving the neck, the joint bends the most around number 2. The joint in area 2 does not bend much, so it only serves to assist the movement of the joint in area 2. When turning the head left and right, the left and right rotation movement is performed around joint 1.

The gap between the clavicle and the neck



The collarbone (clavicle) is where the neck begins.

It is adjacent to the branch.

If you touch this part

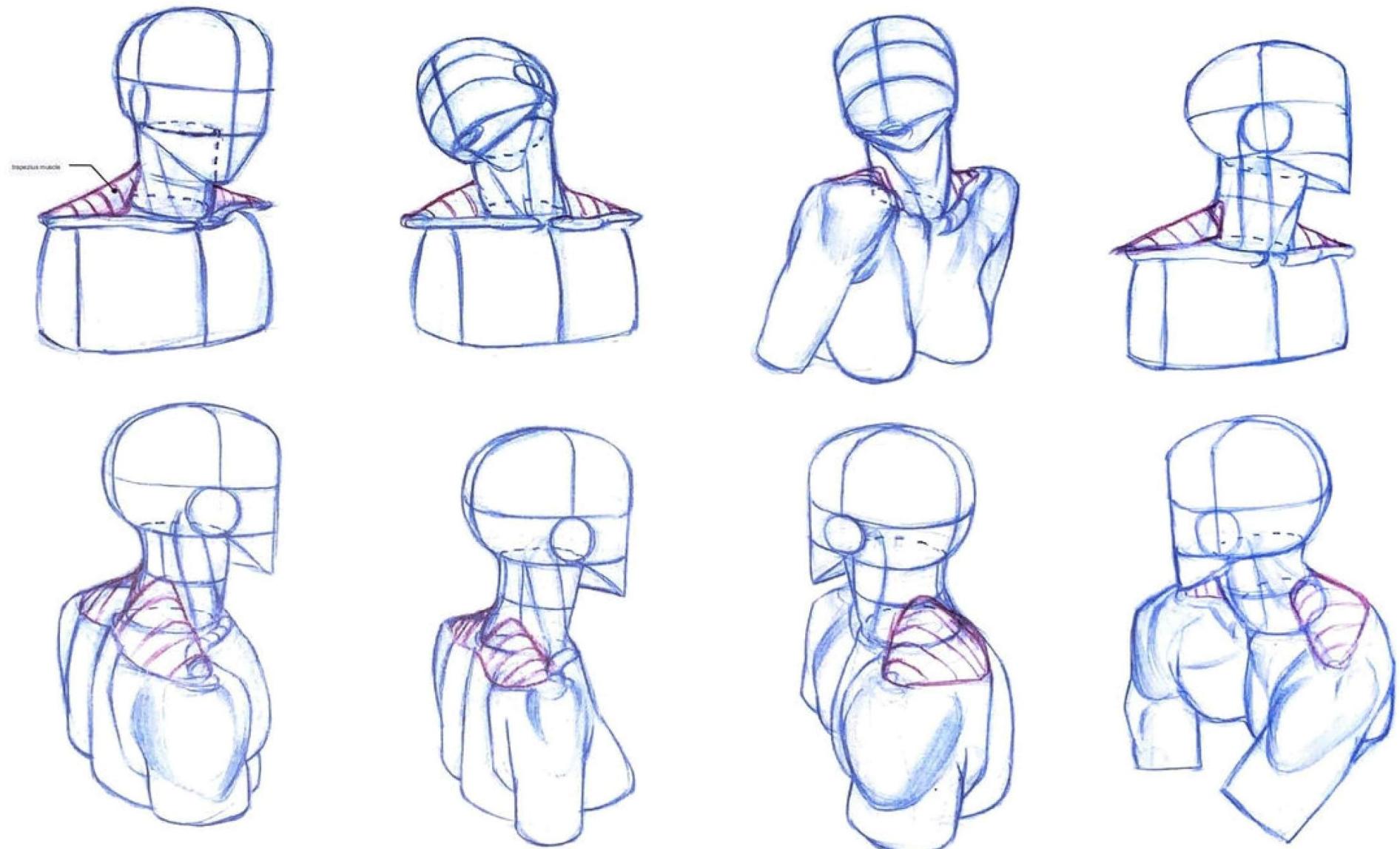
You can tell right away.

The gap between the neck and collarbone

Be careful  
not to fall!

○ The starting point of the  
neck and the clavicle are in contact.





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Changes in the shape of the trapezius muscle

Rather than thinking of the connection between the neck and trapezius as the same flow, it is better to view the neck as a cylinder and think

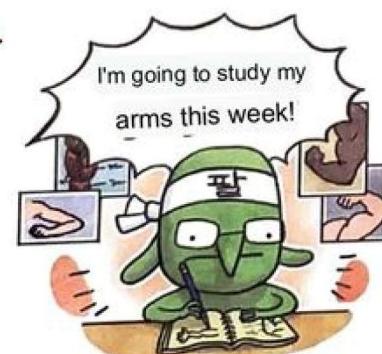
of the trapezius as an unfixed form as shown in the picture. This is because the shape of the trapezius muscle changes depending on the position of the tip of the shoulder.

## structure and action of muscles



Why did Leonardo da Vinci and Michelangelo devote themselves to anatomy even though they lived in an era when human dissection was taboo?

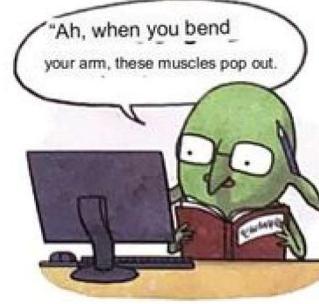
Even though I made the work with a real model in front of me. The two artists felt limited in creating works with only superficial information. In the end, I was able to dramatically improve the level of description of the human body by directly studying the internal structure of the human body. If you rely only on reference materials without understanding the structure, it will take a lot of time to find the right materials for the posture or angle you want to draw. Also, it is possible to draw the human body incorrectly by looking at the model's unusual body shape, or the shape that looks incorrect due to the angle of the lighting. Those who draw illustrations or cartoons should be able to create and draw characters with various angles and postures without a model. In other words, it is essential to know the structure and working principle of the human body. There are some educators who say that there is no need to put a lot of emphasis on studying anatomy. Rather, by studying anatomy, we harm the naturalness of the human body. From the point of view of writing a human anatomy book, my opinion is that you should not study the human body only with anatomy, but anatomy is an indispensable subject in order to properly create the human body. Of course, drawing the human body with an overly focused focus on anatomy will result in a hard drawing of the human body or an unnatural flow, as the educators mentioned above claim. However, you should not neglect your anatomy study because you are concerned about these side effects. This is because in order to draw the human body naturally, it is necessary to study anatomy in depth and then be able to apply it to the situation. Therefore, I think it is a good attitude to study anatomy with the mindset of 'I will study it properly and then apply it as needed' rather than 'I will not do it at all if I cannot do it perfectly'. A high level of understanding of the human body will be a solid foundation for you to express what you want to draw without hindrance. We will open the chapter of human anatomy, emphasizing once again that exaggeration, reduction, omission, and transformation of the body are possible based on familiarity with basic shapes.



Rather than deciding and starting,



While practicing croquis·



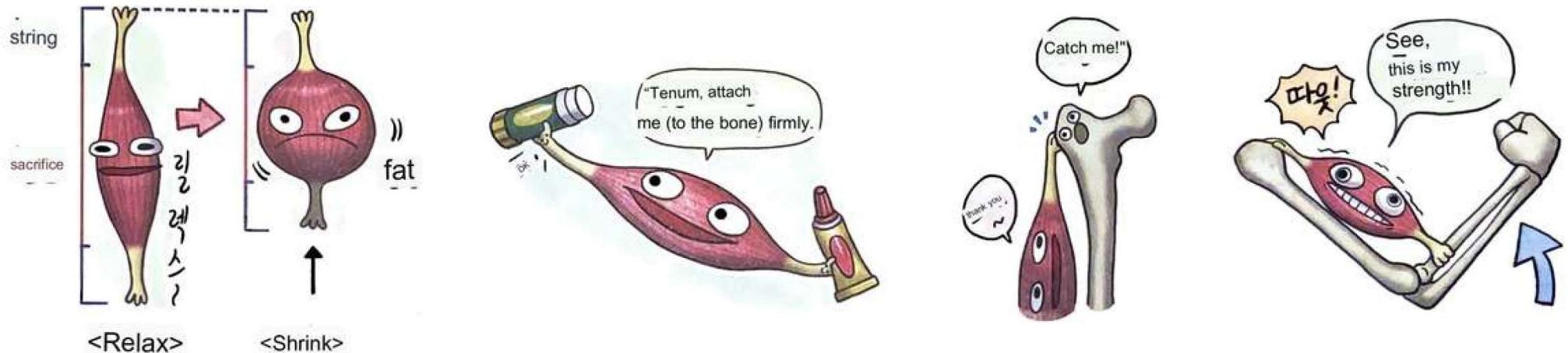
The moment I get curious, I look for it



You will learn a lot more.



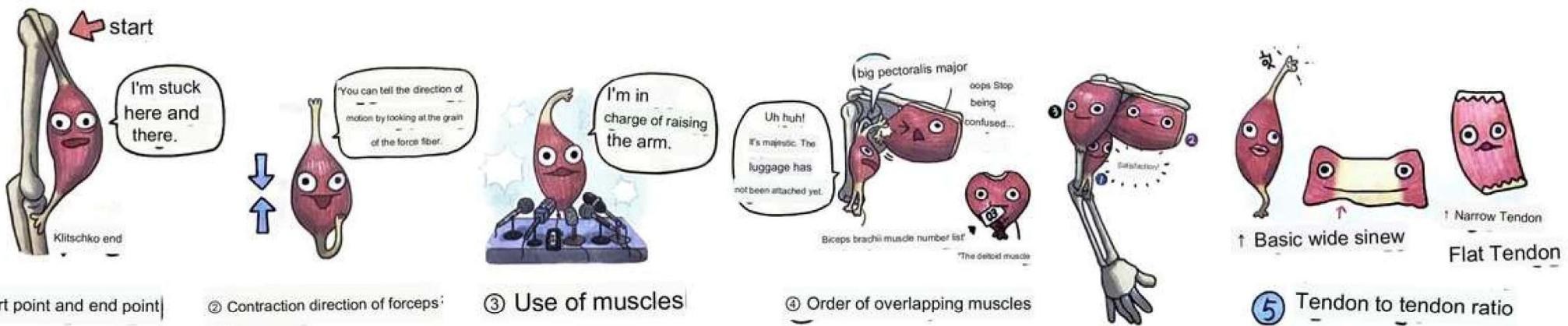
## muscle training points



If you learned the movement of joints with a simplified skeleton in 'Chapter 1 Figure of the Human Body', in this human anatomy part, we will learn about the muscles attached to a more realistic skeleton.

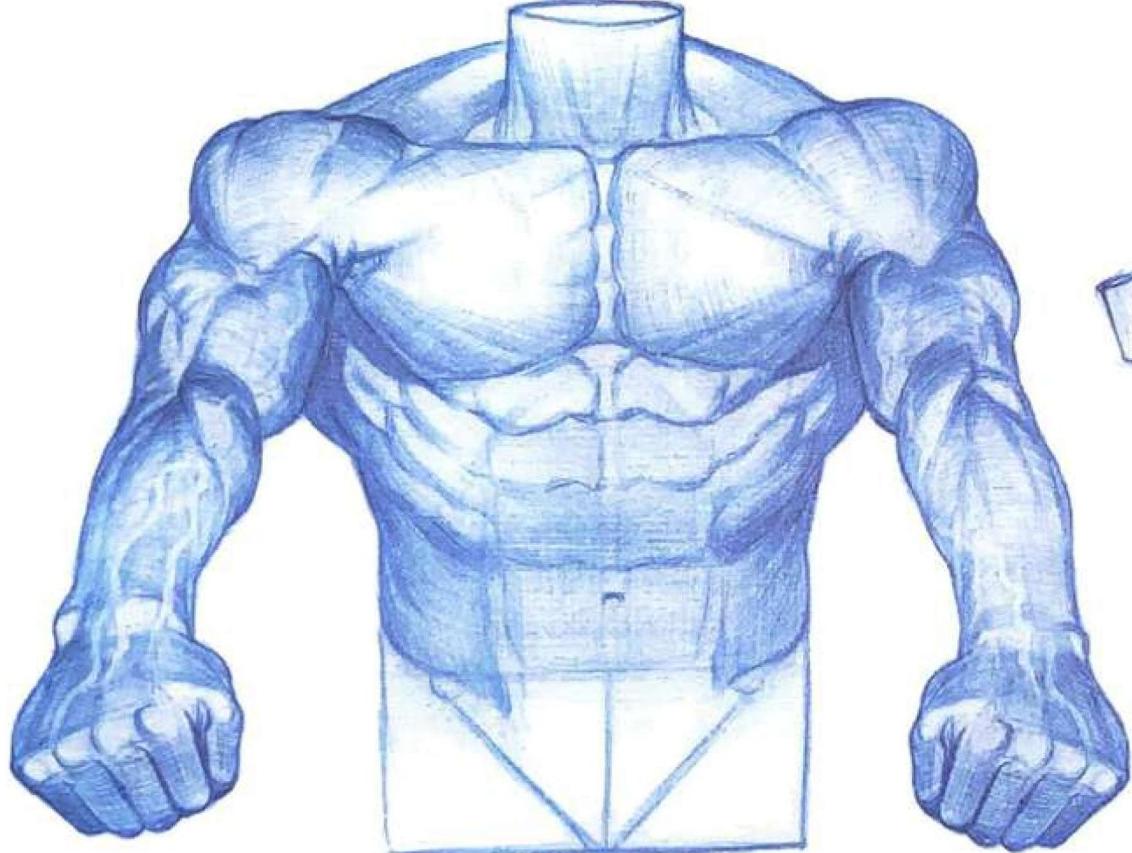
First, muscles are made up of tendons and tendons, and when force is applied to a muscle, the tendons shorten in length and increase in volume. On the other hand, tendons do

not contract and relax. Tendons are always present at the ends of tendons because they act as glue that attaches tendons to bones. These tendons vary in length and area depending on the muscle.



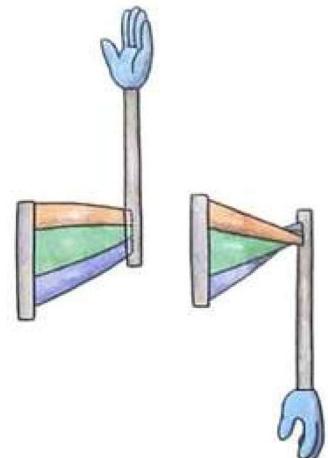
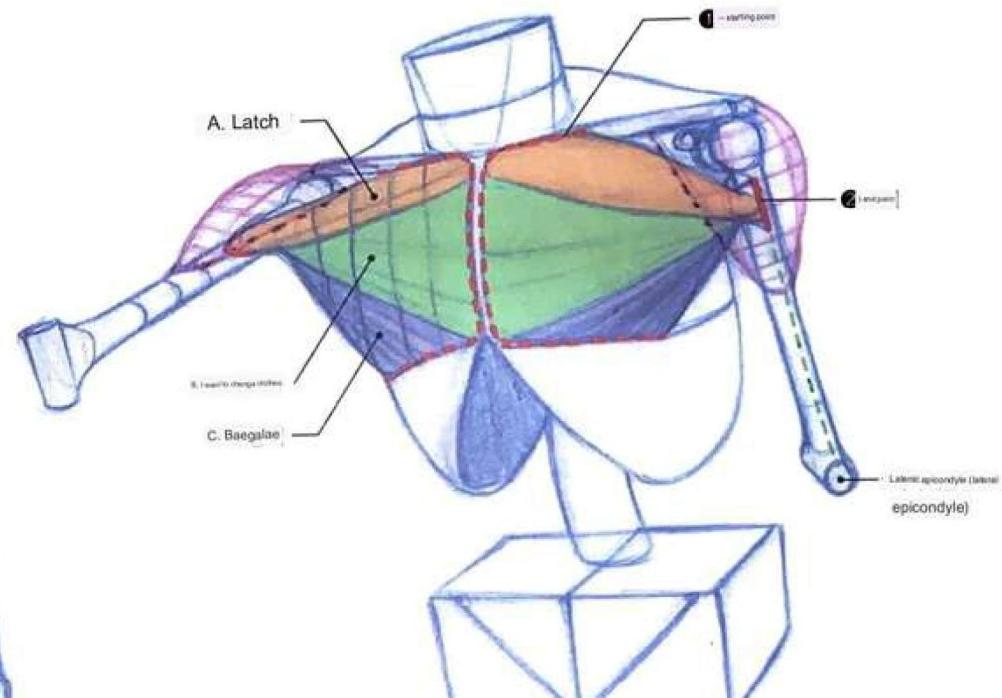
## 1 Location and use of trunk muscles

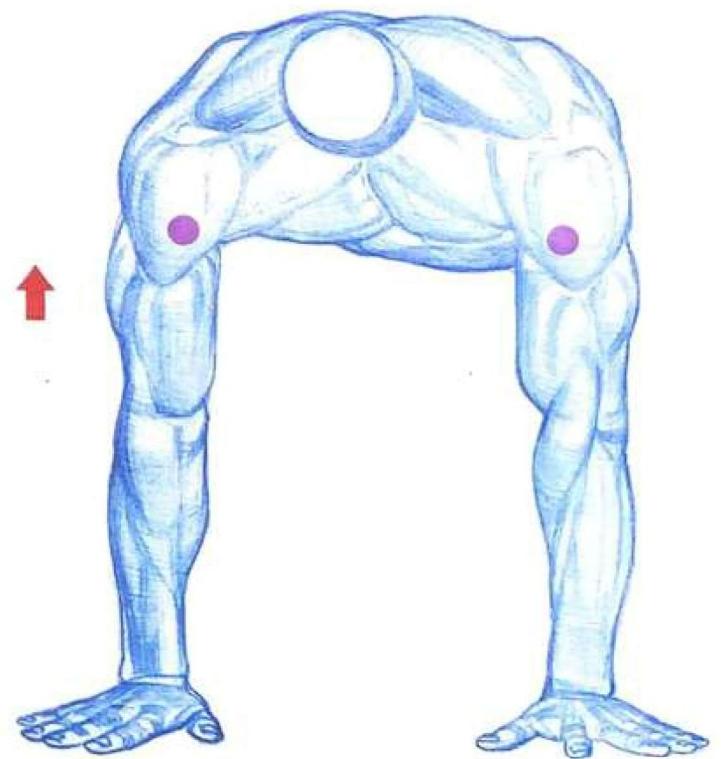
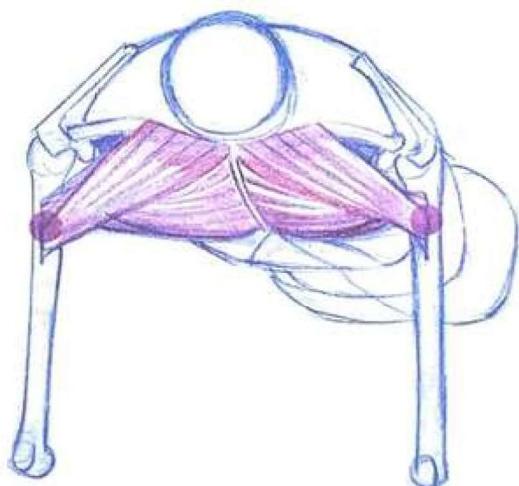
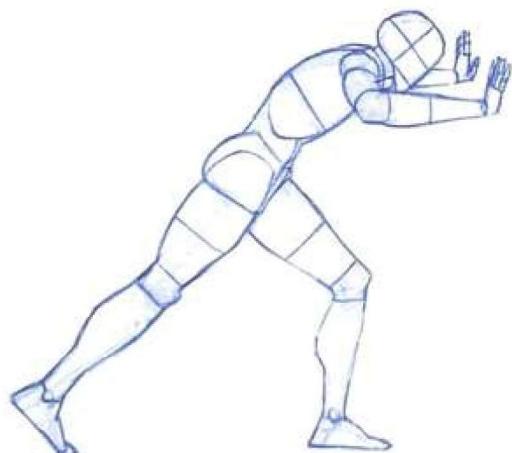
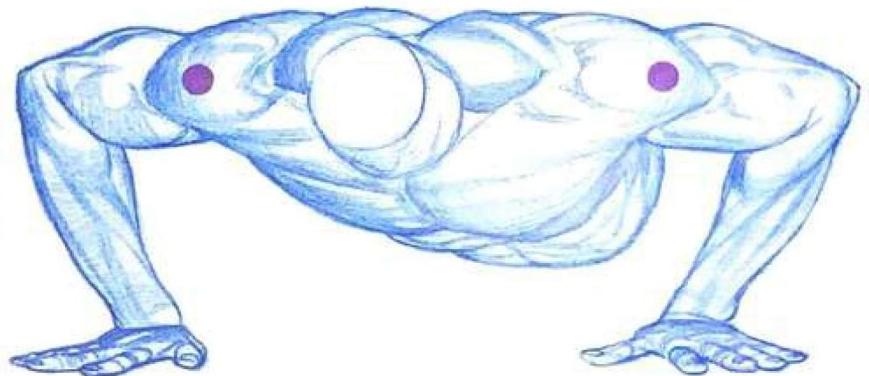
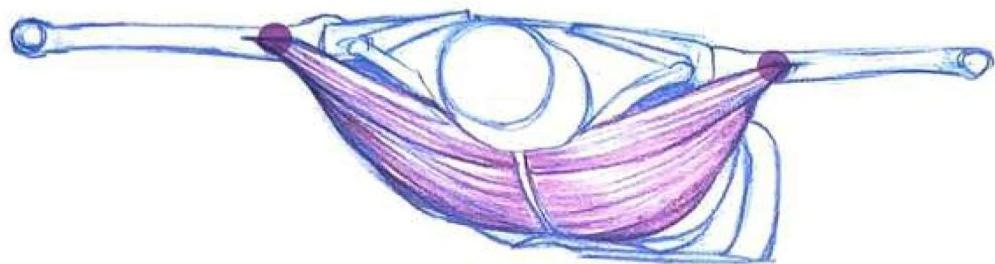
### ■ Pushing pectoralis major muscle (pectoral muscle)



starting point and ending point

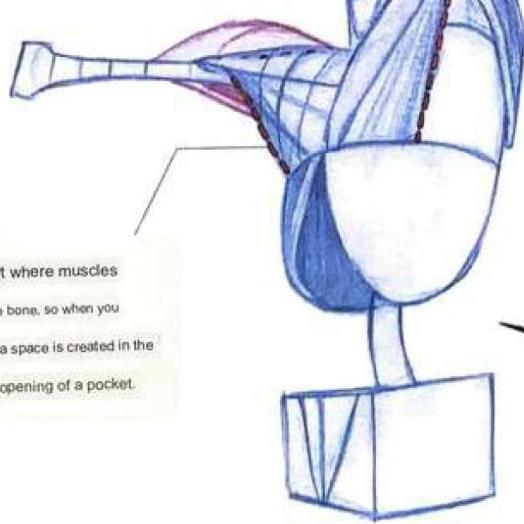
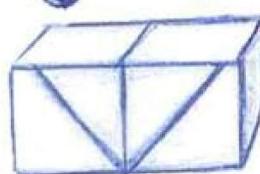
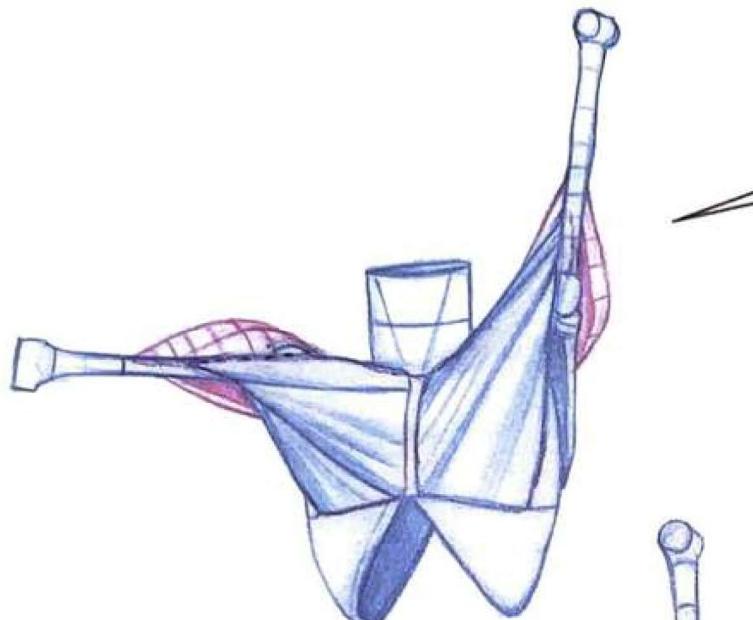
The pectoralis major muscle is divided into three branches. The cross section (A), the upper arm section (B), and the belly section (C) begin in a U-shape and are twisted like a twist and attached to point 2 of the upper arm bone. Point 2 is located at the upper point of the lateral epicondyle line, which is the outer part of the protruding part on either side of the elbow.



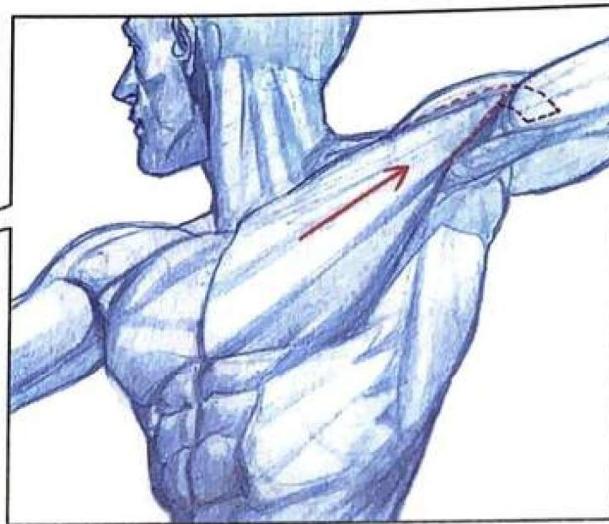
use

The pectoralis major muscle is used when pushing the arm forward and when hugging something. A simple exercise that develops the pectoralis major muscle is push-ups. The pectoralis major muscle, which is divided into three branches, is used centering on the cross branch when pushing the arm upward, the garter branch when pushing the arm forward, and the belly branch when pushing the arm downward.



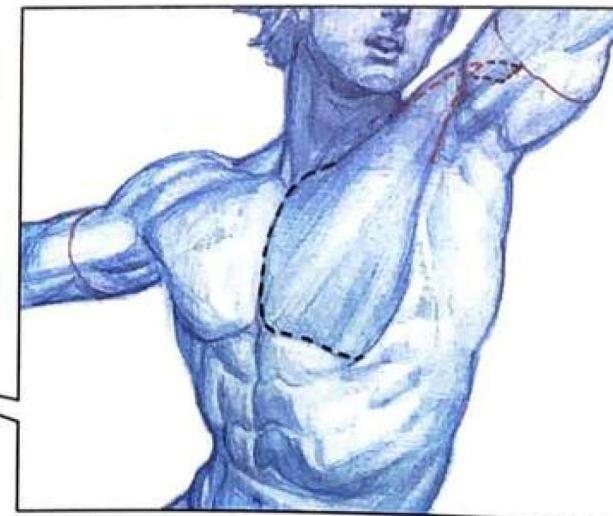


This is the part where muscles don't attach to the bone, so when you lift your arm up, a space is created in the armpit, like the opening of a pocket.



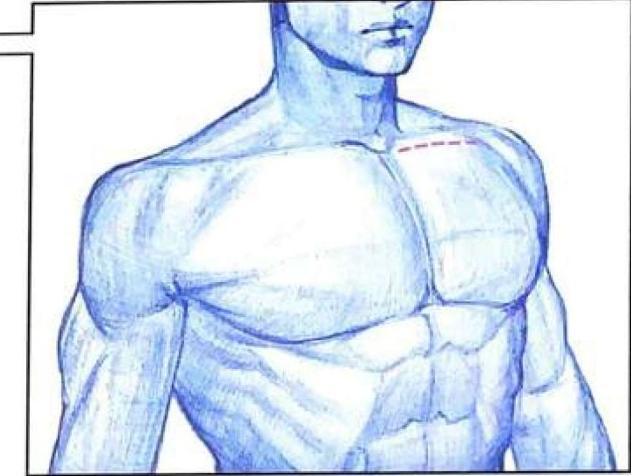
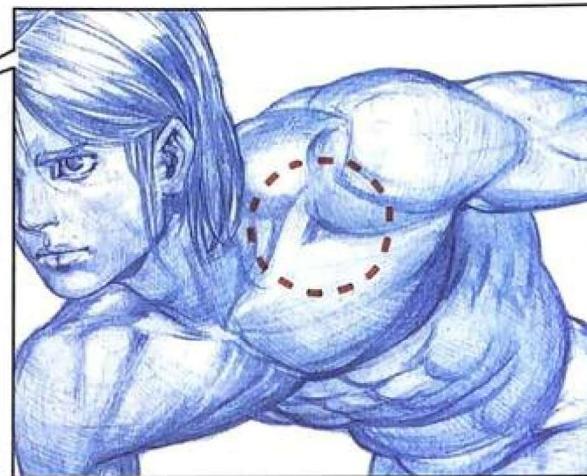
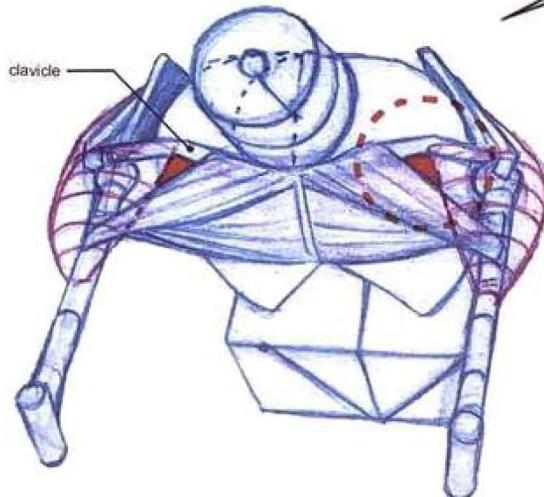
#### Feature 1

The tendons of the pectoralis major muscle are pulled all the way along the end point. This is why it is important to know exactly where the endpoints are. Observe the shape change of the pectoralis major muscle when the arm is raised and lowered!



#### feature 2

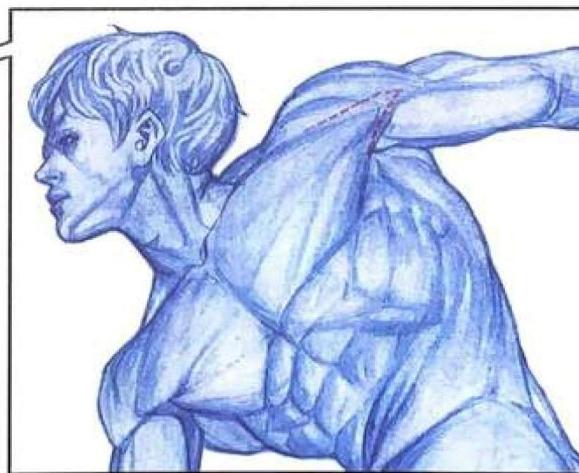
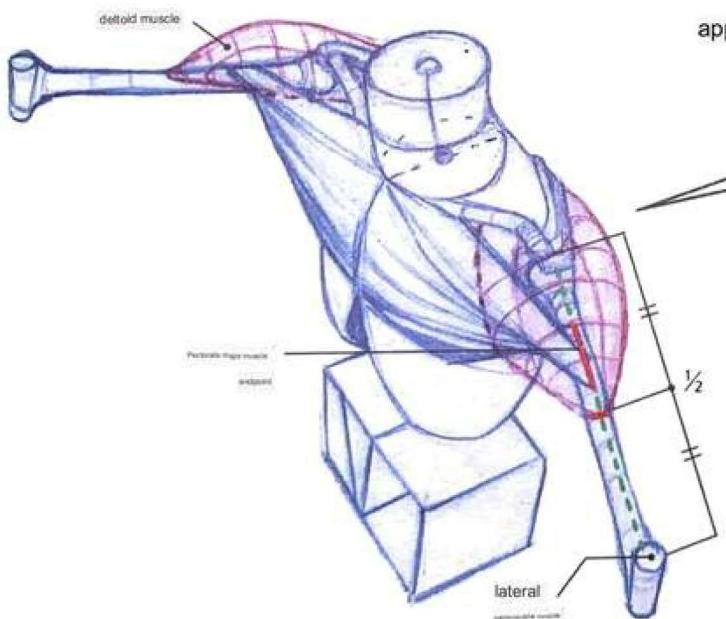
Raise your arms to untwist the three prongs. Since the pectoralis major muscle is in a relaxed state, the thickness of the muscle should be expressed thinner than usual. The black dotted line is the area where the pectoralis major muscle attaches to the ribs, and the red dotted line shows the flow through which the pectoralis major muscle winds its arm toward the end point.

**Feature 3**

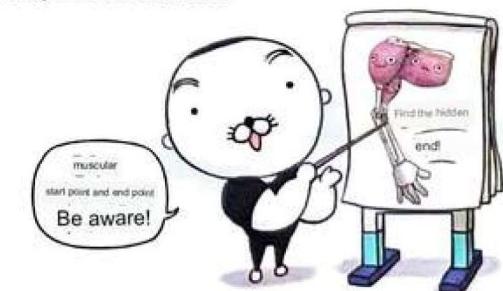
The sunken area under the clavicle is an empty space. The more the muscle develops, the clearer the concave appearance becomes.

**feature 4**

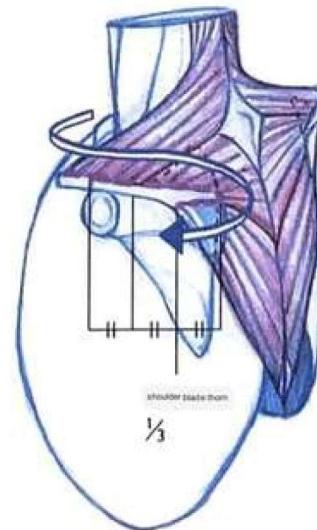
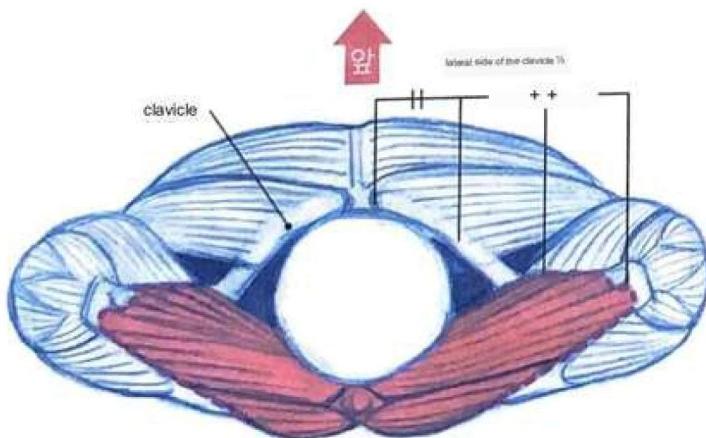
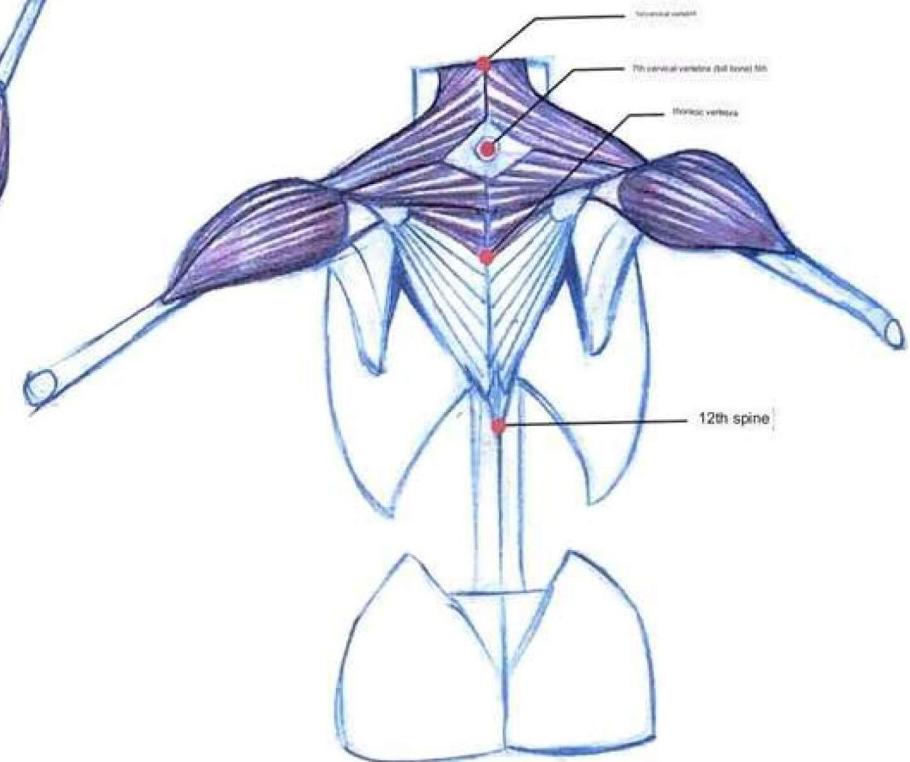
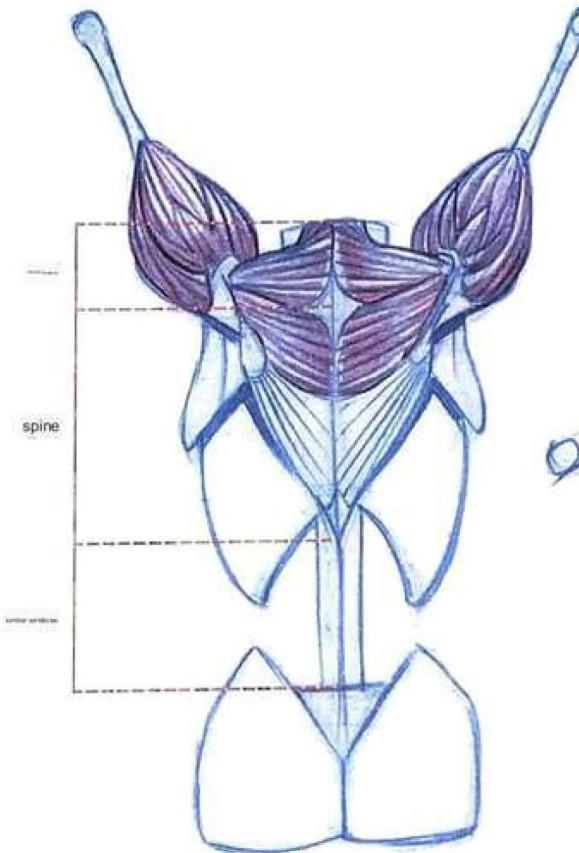
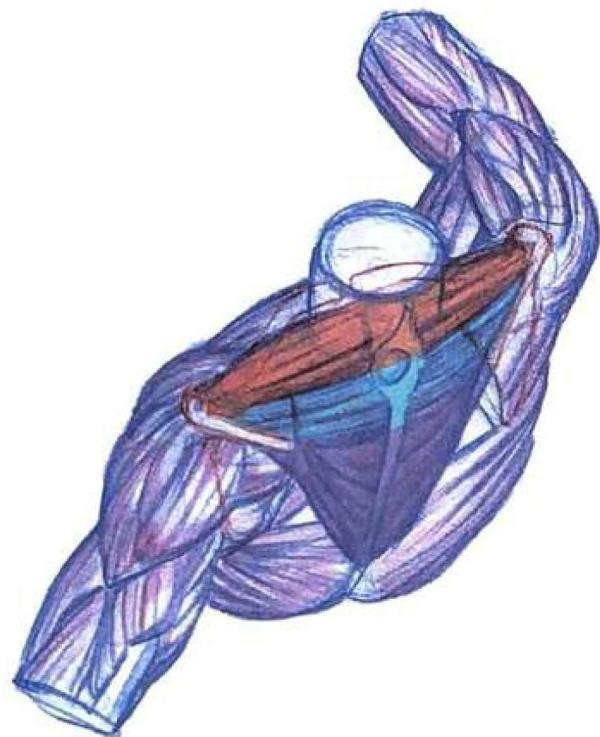
Because the pectoralis major muscle is attached to the lower surface of the collarbone (clavicle), the shape below the collarbone is not revealed when the muscle is developed.

**overlapping order**

The deltoid muscle (deltoid muscle) covers the end point of the pectoralis major muscle. The deltoid attaches to the point of the lateral epicondyle line of the humerus.

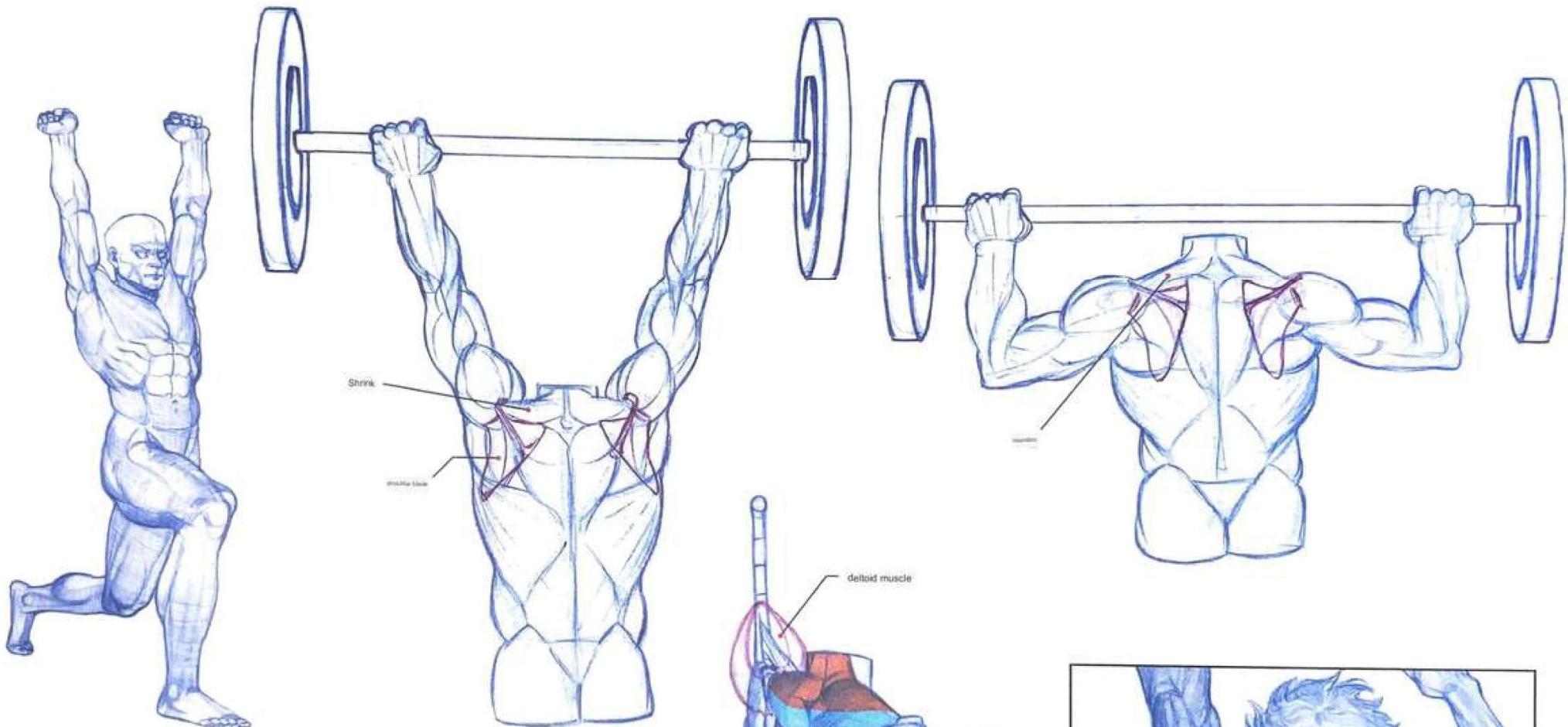


■ Trapezoid muscle (trapezius muscle) that lifts up

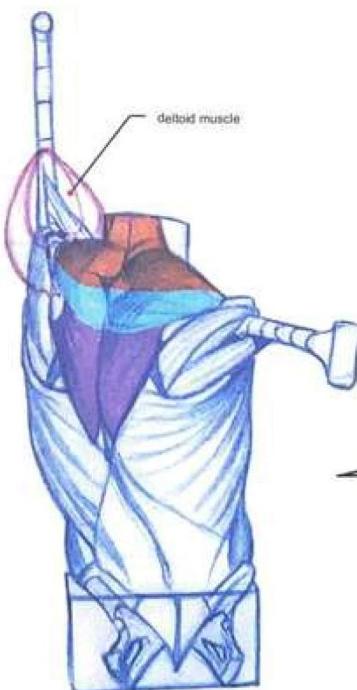


starting point and ending point

The trapezius is an important muscle that is also involved in the movement of the neck and shoulders, and is largely divided into upper, middle, and lower parts. Looking at the starting point, the upper is from cervical vertebrae 1 to 7, the middle is from cervical vertebrae 7 to 5th vertebrae, and the lower is from vertebrae 5 to 12. and lower parts. The end point is from the lateral point of the clavicle to the upper surface of the scapula and attaches to the lower surface of the scapula.

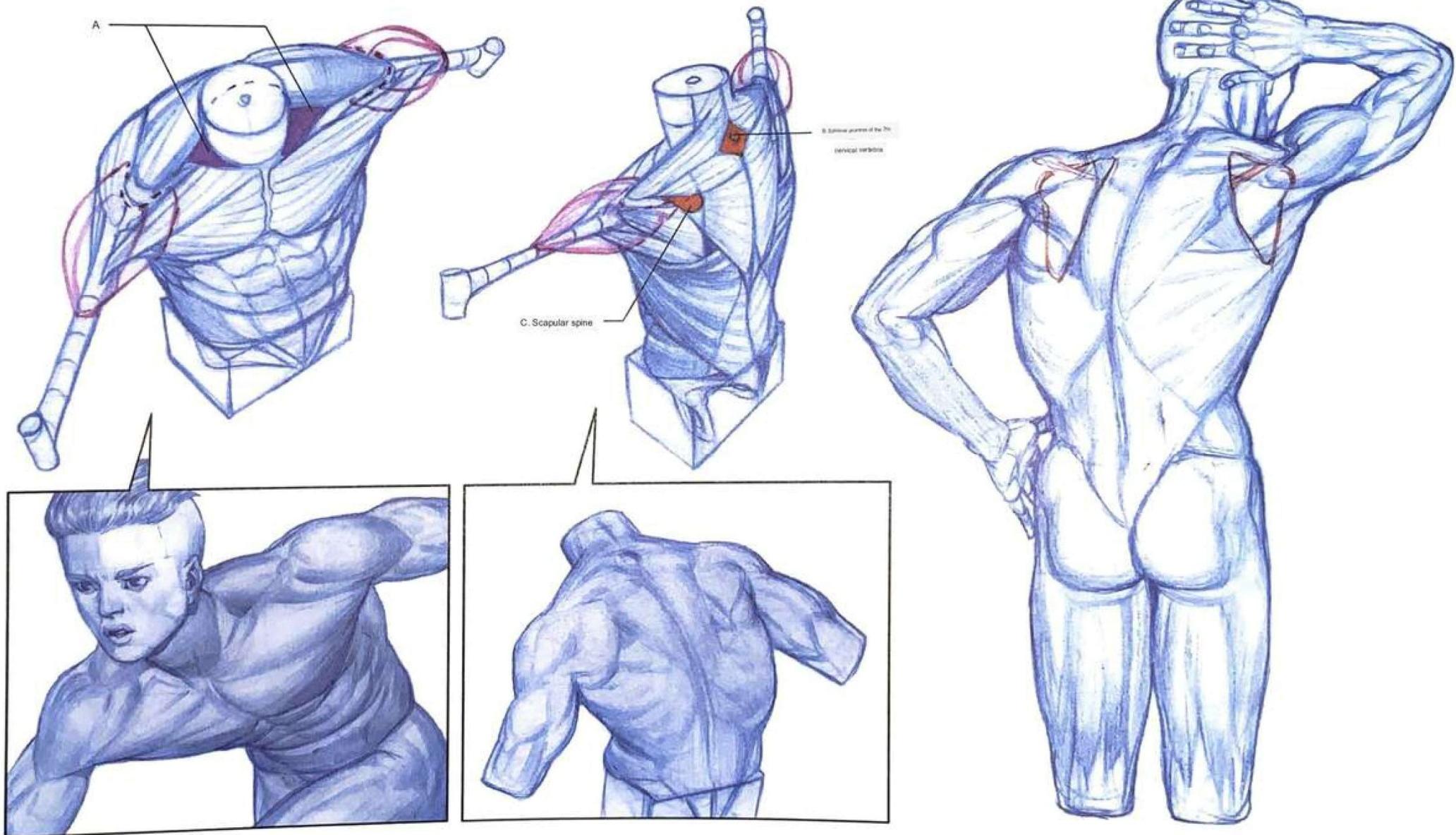
USE

Depending on the movement of the shoulder, the area where the force goes is different. The upper part raises the shoulder blades, the middle part pulls the shoulder blades back, and the lower part acts to lower the shoulder blades. As shown in the picture above, when lifting a heavy object, the upper and middle trapezius muscles are used, and the deltoid muscles of the shoulders also help.

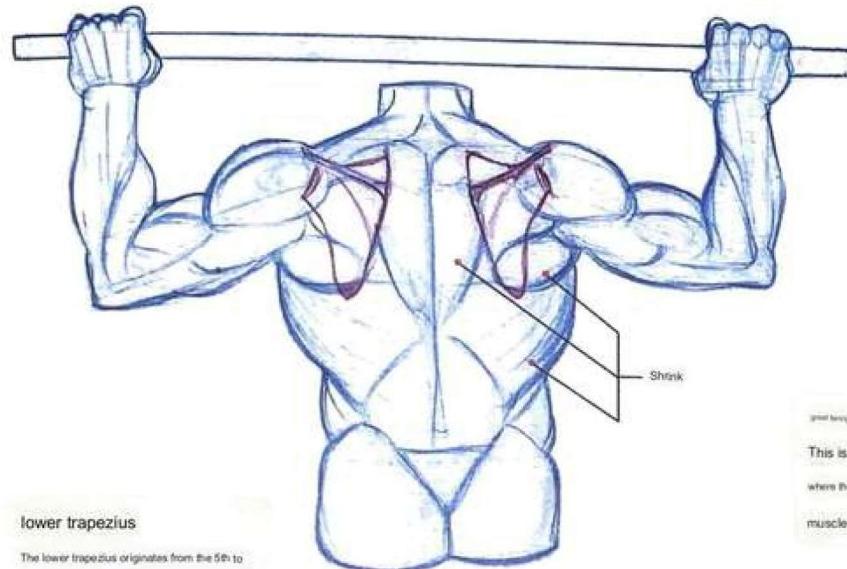


Please remember that the empty space A between the upper trapezius muscle and the neck is the part that stands out on the outside.

Points B and C are the tendon areas of the trapezius muscle, and the concave shape is evident when the muscle is contracted.



Wide back muscle (Latissimus dorsi muscle), lower trapezius muscle (trapezius muscle), teres major muscle (teres major muscle) that pulls down



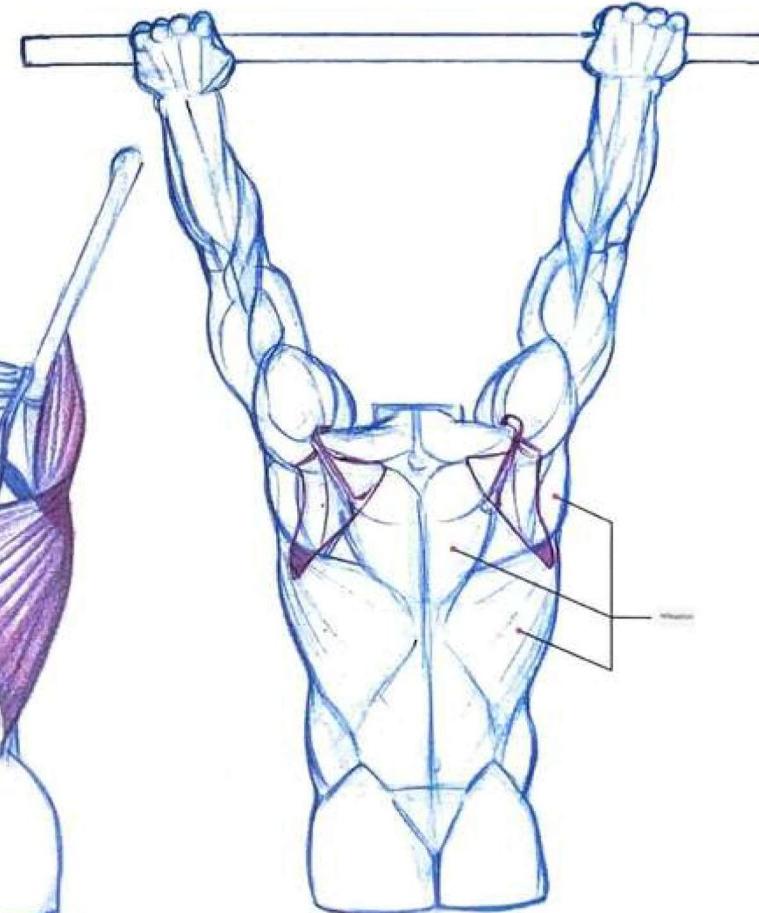
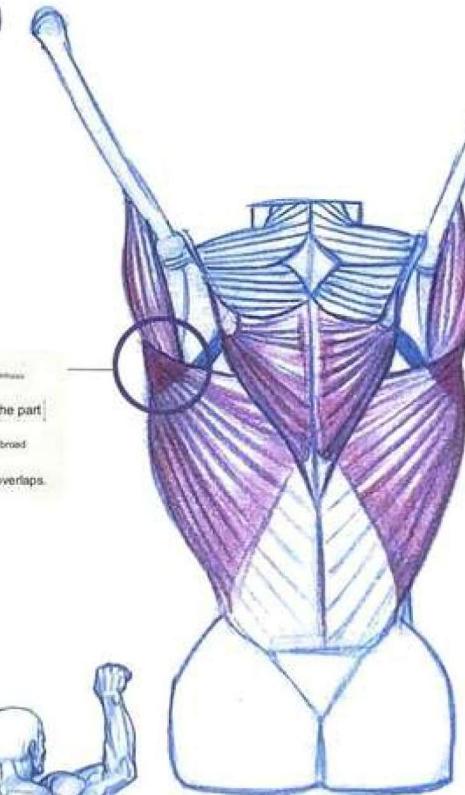
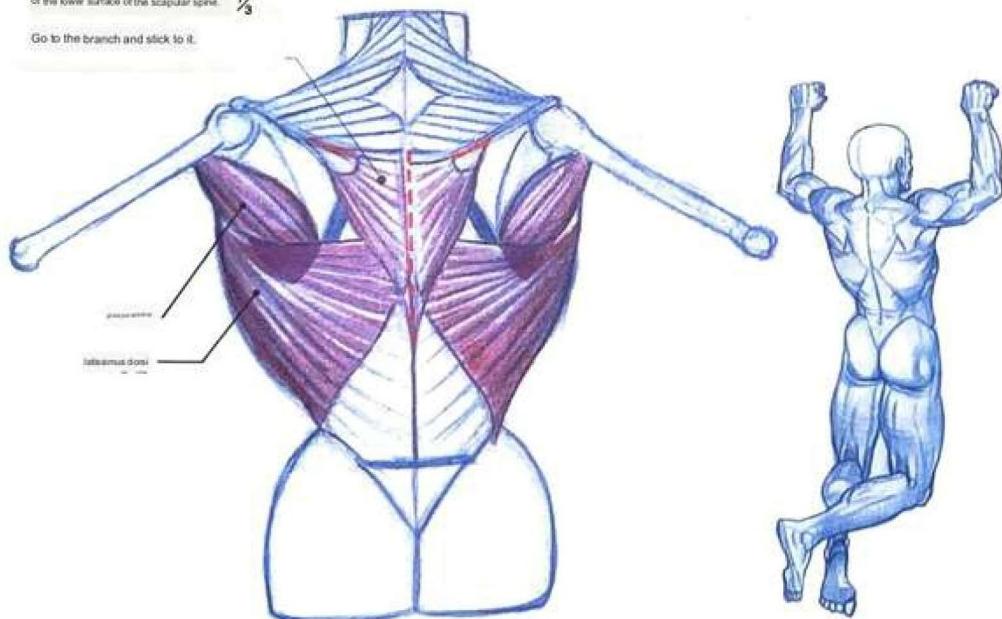
#### lower trapezius

The lower trapezius originates from the 5th to 12th vertebrae, on the inside

of the lower surface of the scapular spine.

$\frac{1}{3}$

Go to the branch and stick to it.



03

Human anatomy

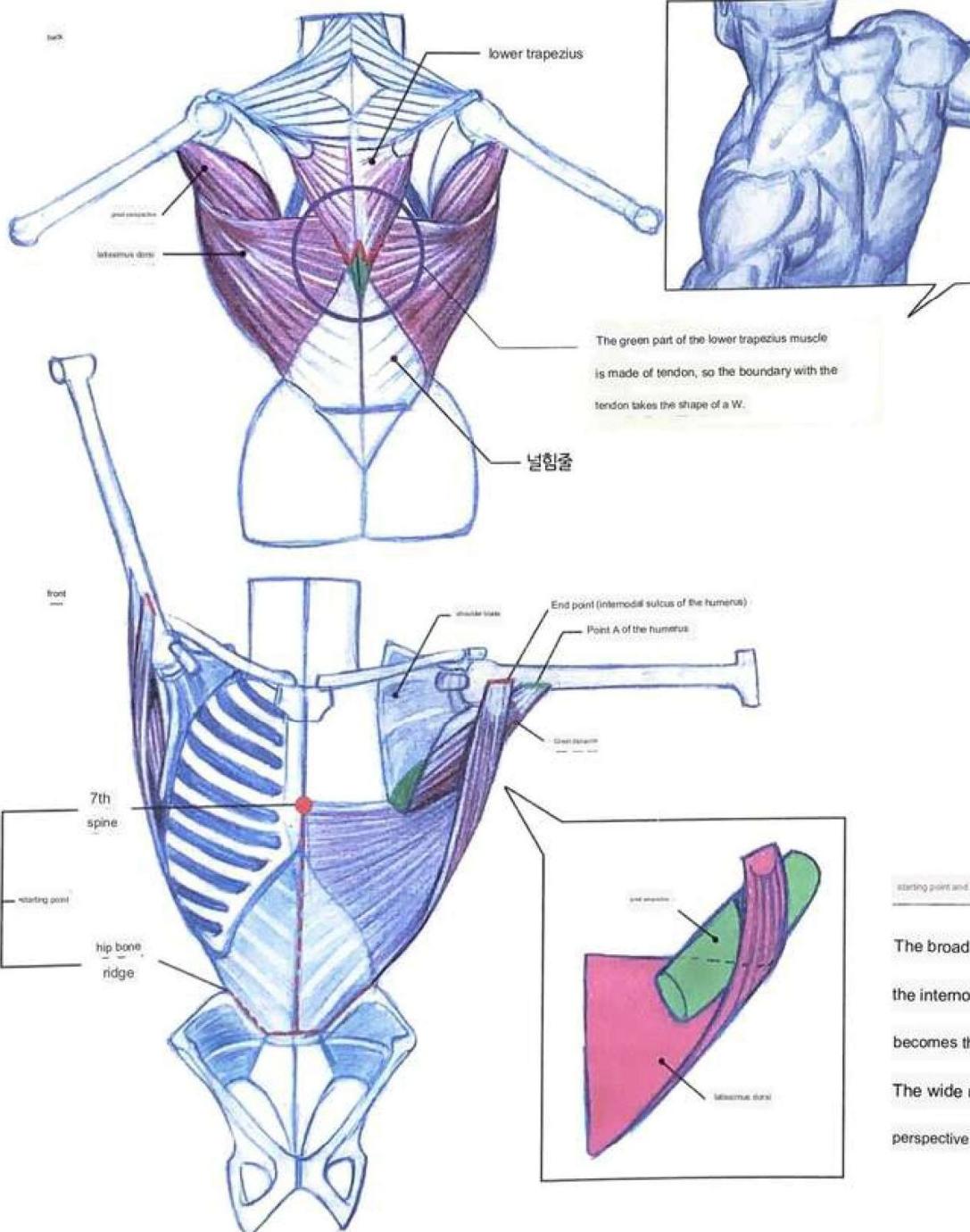
The latissimus dorsi is a muscle that was used a lot in the days of the apes who climbed trees,

so it is still the most widely distributed in our body. However, as I walked upright,

the use of the latissimus dorsi decreased and it did not appear well on the outside.

On the other hand, if you consistently do pull-ups similar to tree climbing, the

development is more prominent than any other muscle. The latissimus dorsi muscle is used to forcefully pull the arm down, with the teres major and lower trapezius helping out.

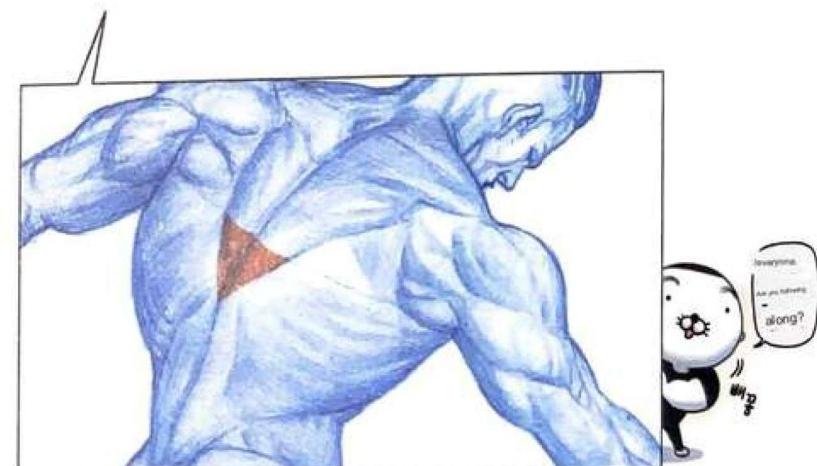


The tendon area that spreads widely in the broad round is called the 'null tendon'.

The area of this tendon is considerably larger than the tendon area of other muscles. Knowing the boundaries between tendon fibers and tendon areas, you can accurately express when muscles relax and contract.

#### overlapping order

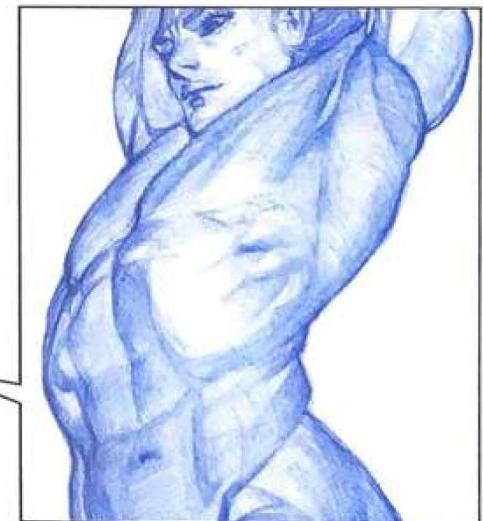
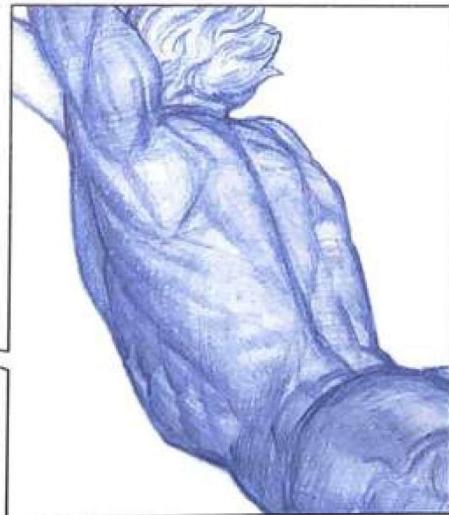
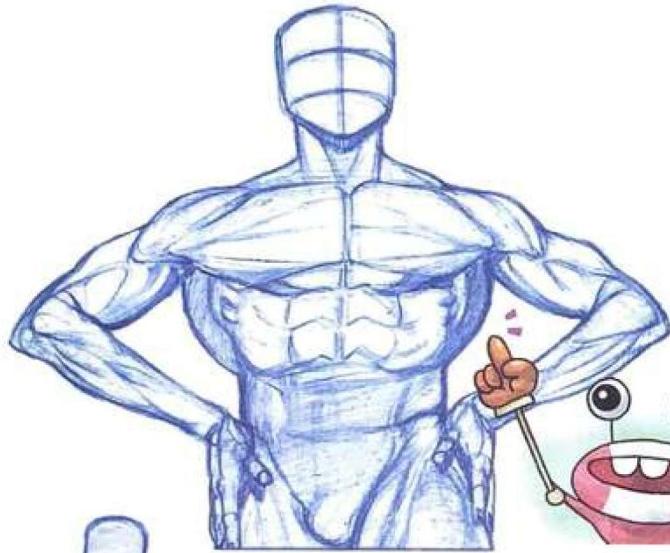
The latissimus dorsi and trapezius overlap vertebrae 7 through 12, with the trapezius covering the latissimus dorsi by the shaded area in the figure below.



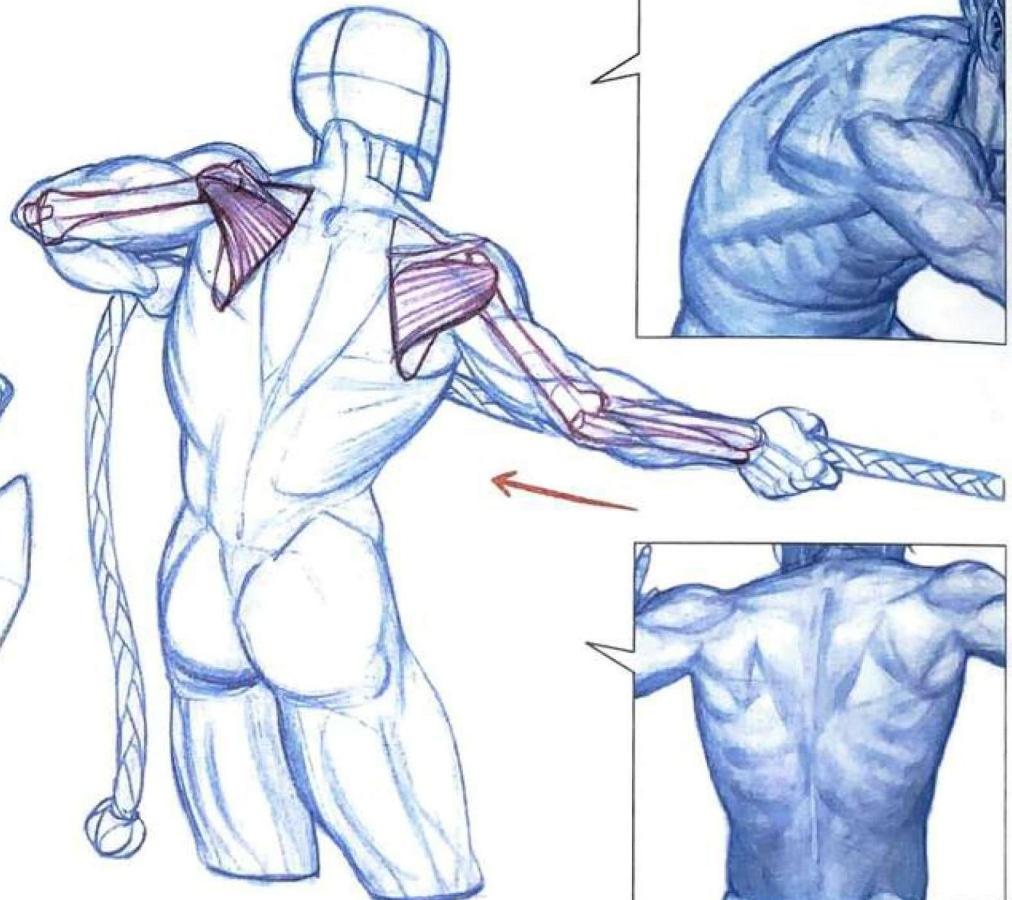
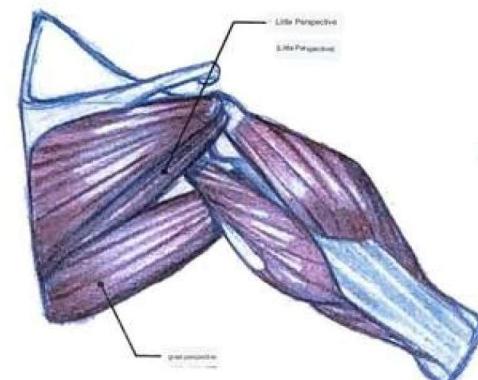
#### starting point and ending point

The broad roundus starts at the iliac crest along the spine from the 7th thoracic vertebra and ends at the intertrochanteric sulcus of the humerus. The starting point is wide, but towards the end point, the muscle becomes thinner. The teres major attaches from below the shoulder blade to point A on the upper arm bone. The wide round is overlapped in the form of enclosing the great circumference. I will study the great perspective in more detail later.

The latissimus dorsi viewed from different angles



■ Infraspinatus muscle (infraspinatus muscle), teres major muscle (teres major muscle) that help pull



Since the small perspective does not stand out on the outside, I will express it together with the infraspinatus muscle from the next chapter.

starting point and ending point

The purple area is the starting point where the infraspinatus attaches to the shoulder blade and the end point where it touches the humerus head,

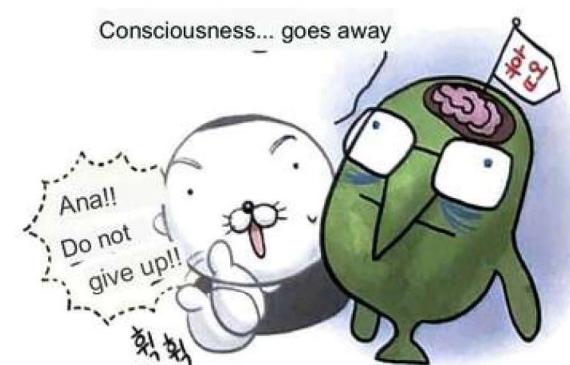
and the red area is the start point where the teres major muscle attaches below the shoulder blade and the end point where the humerus touches the front of the arm.

use

The infraspinatus and teres major muscles pull the arm back to pull something.

overlapping order

The deltoid muscle covers most of the area where the infraspinatus and teres major muscles are intertwined, so the complex structure is not clearly visible. However, it is a part that must be studied in order to understand the working principle of movement. This part gets more complicated the more the movement is done, so I'll cover it in detail later.



■ Rhomboid muscle that lifts the shoulder

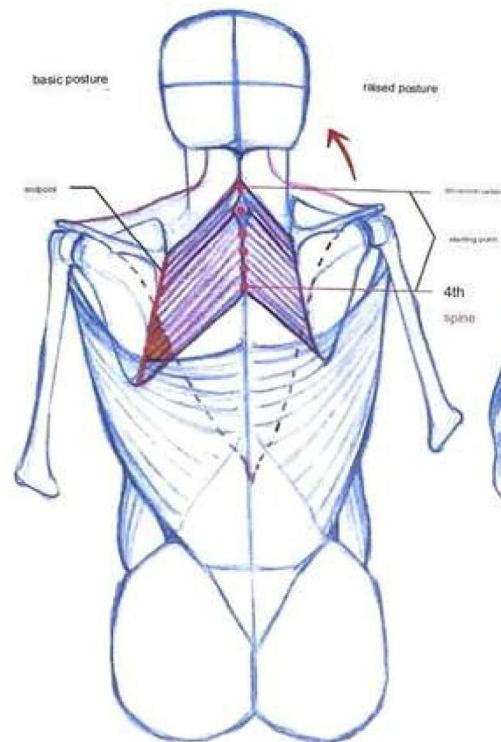


Figure 1-1

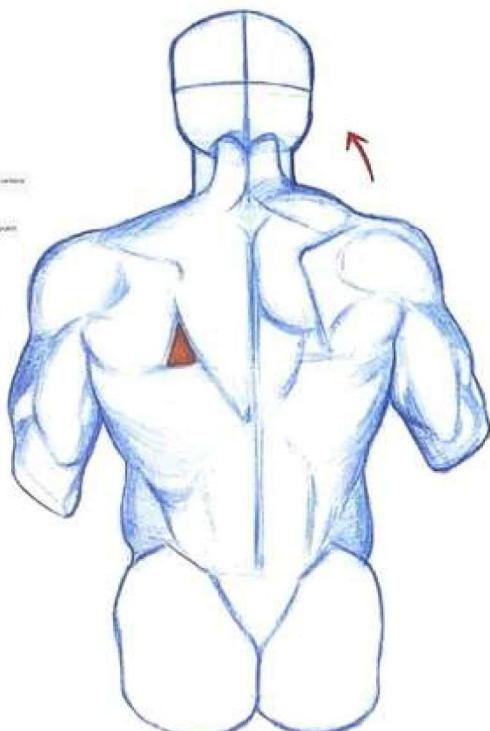


Figure 1-2

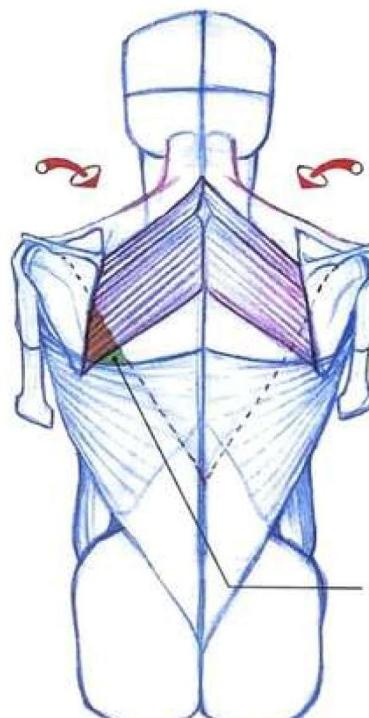


Figure 2-1

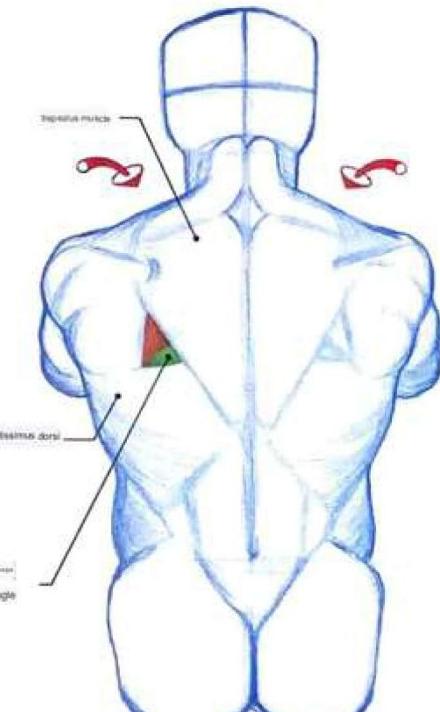


Figure 2-2



Starting point and ending point

The rhombus is shown in Figure 1-1.  
Starts at the 6th cervical vertebra

On the inside of the shoulder blade  
through the 4th thoracic vertebrae

It hits the corner.

use

The rhomboid muscle acts to elevate and pull the shoulder toward the back. You can observe the appearance of the rhombus muscle when it contracts through Figure 1-2. When the shoulders are pushed forward as far as possible, the rhomboid muscle is in the most relaxed position, and unlike when contracted, it does not affect the appearance, as shown in Figures 2-1 and 2-2.

overlapping order

The rhombus muscles are formed by the trapezius and the latissimus dorsi.

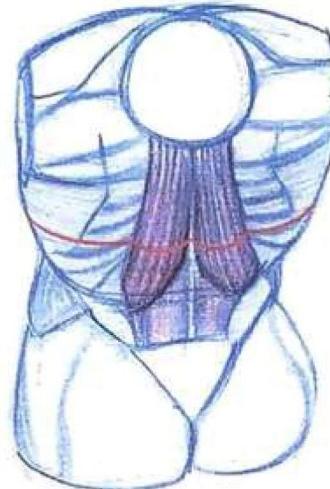
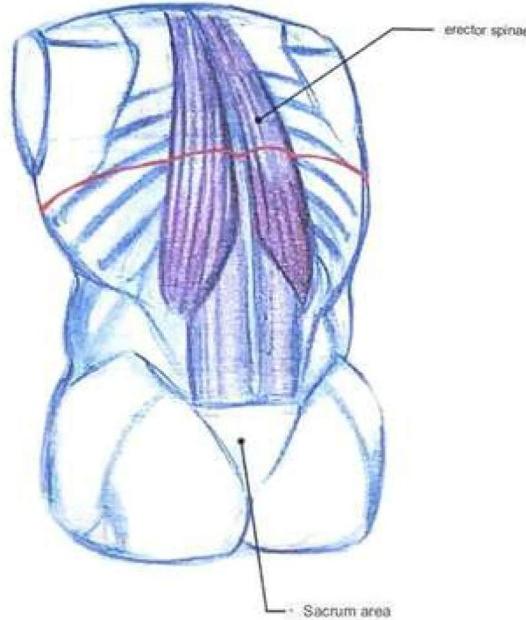
Mostly obscured (except for the auscultatory triangle).

triangle

The auscultation triangle is the part where the stethoscope is placed, hence the name 'Auscultation Triangle'. As shown in Figures 2-1 and 2-2, this is the area that widens when the shoulder is pushed forward.



- The erector spinae muscle that supports the lower back (erector spina bifida)



#### starting point and ending point

The spinous muscle, the longest muscle, and the iliac costal muscle are collectively called the erector spinae. The picture on the left is a simplified version of these muscles combined into a single mass. Please note that it is expressed differently from the actual muscle shape for better understanding. The erector spinae muscle runs along the spine from the base of the skull to the sacrum.

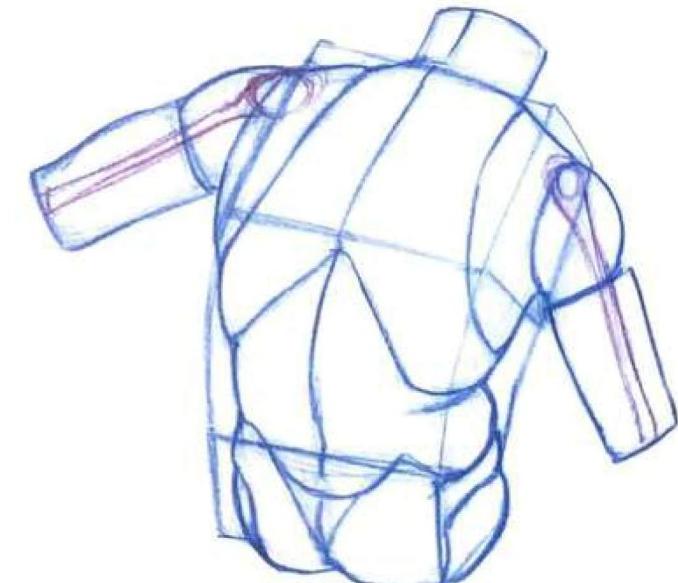
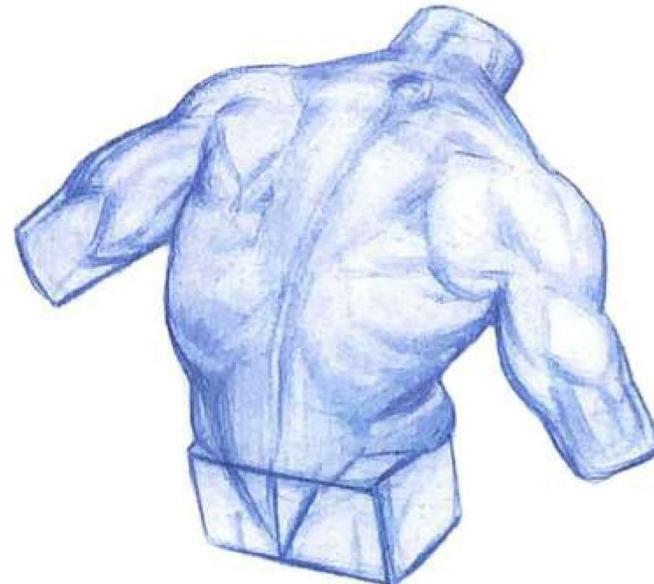
#### use

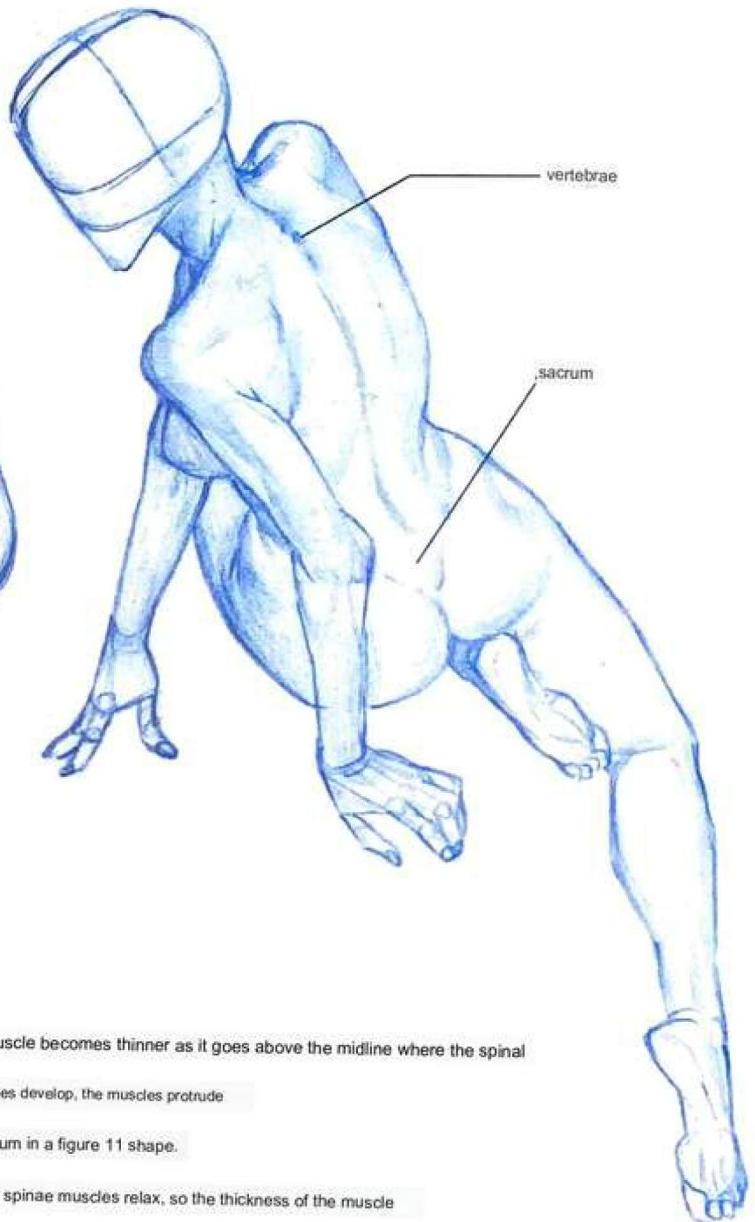
It is used when bending back at the waist and supporting posture.



#### overlapping order

It is located in the deepest layer of the back muscles and is directly connected to the bone.





The sense of volume of the erector spinae muscle becomes thinner as it goes above the midline where the spinal process is located. Also, as the erector spinae muscles develop, the muscles protrude from the center line of the back toward the sacrum in a figure 11 shape. When you lean forward at the waist, the erector spinae muscles relax, so the thickness of the muscle becomes thinner, making the spinal protrusion stand out.

- Serratus anterior muscle (serratus anterior muscle) pushes the shoulder forward.

starting point and ending point

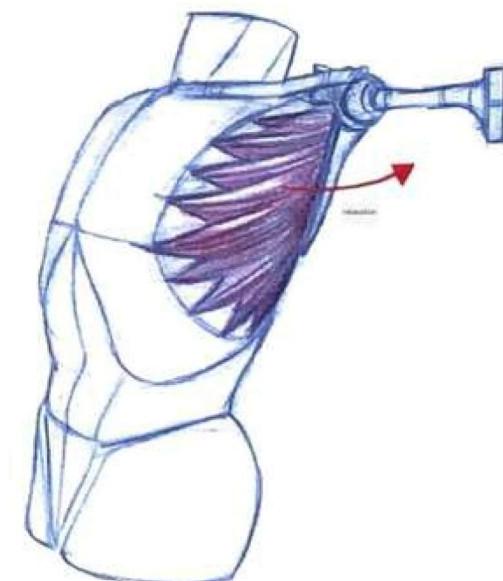
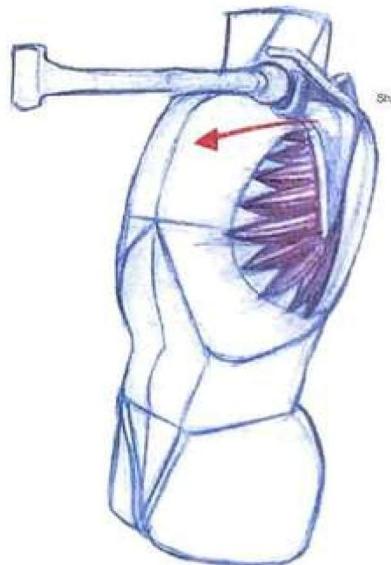
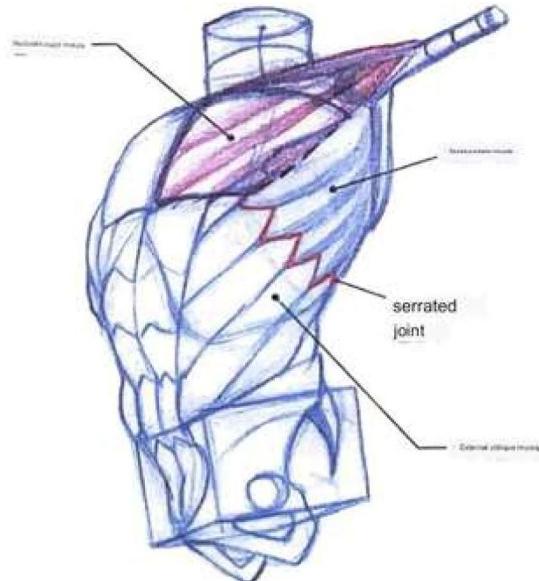
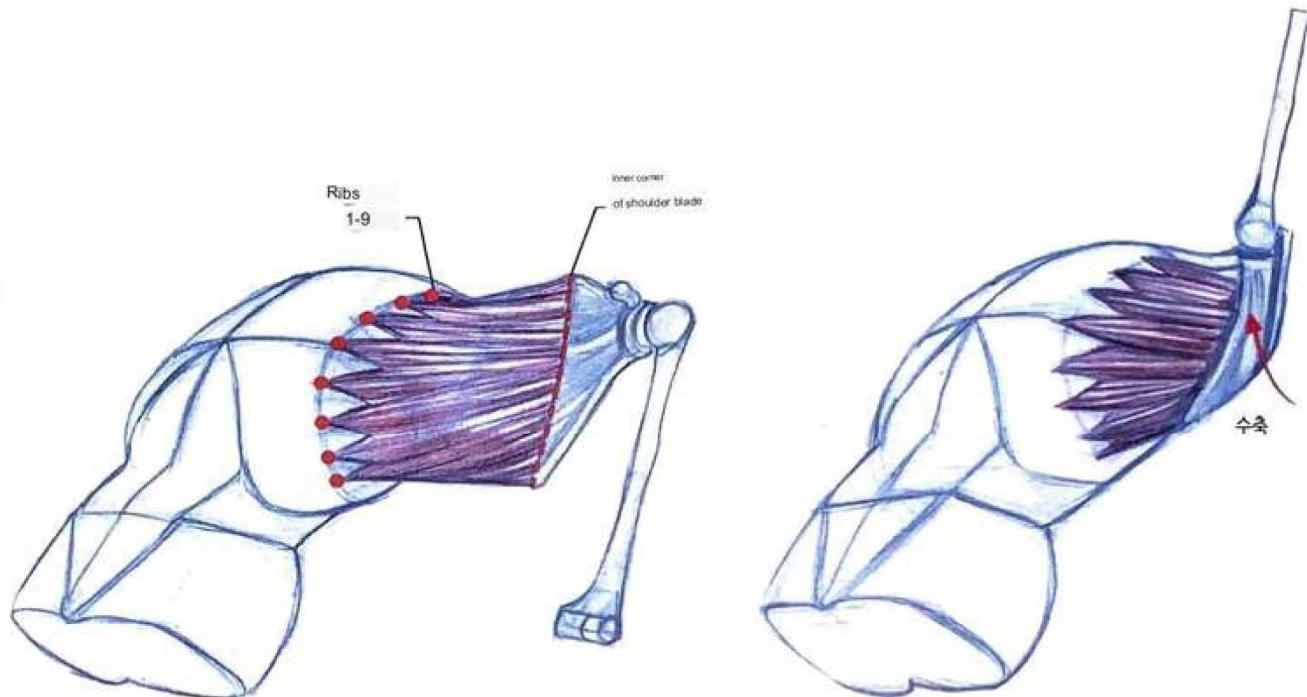
The serratus anterior muscle attaches to the 1st through 9th ribs and attaches to the inner corner of the shoulder blade. It's like covering your chest with your hands

It looks like it.

overlapping order

While the pectoralis major covers the stomach, it extends to the 4th and 5th branches of the serratus anterior muscle.

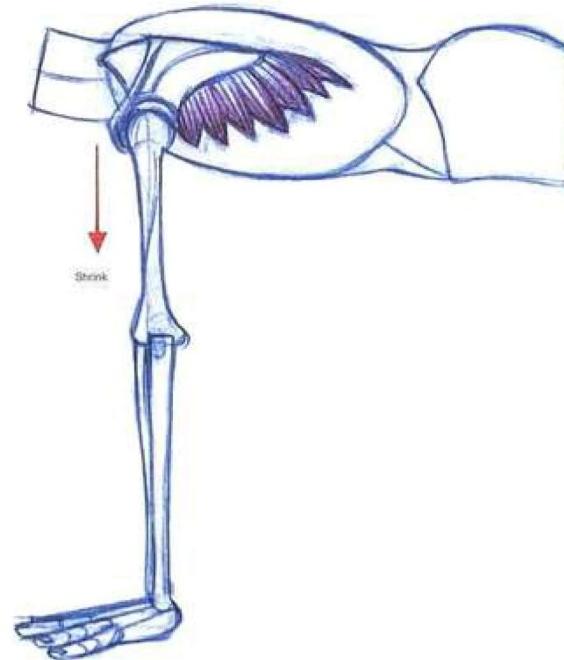
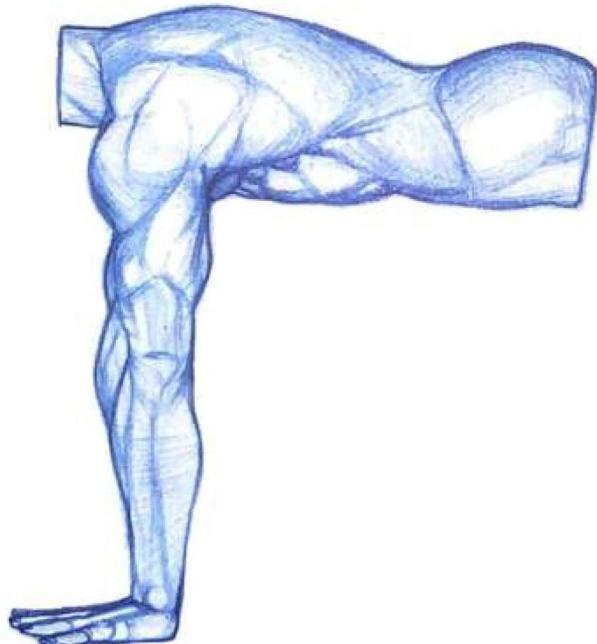
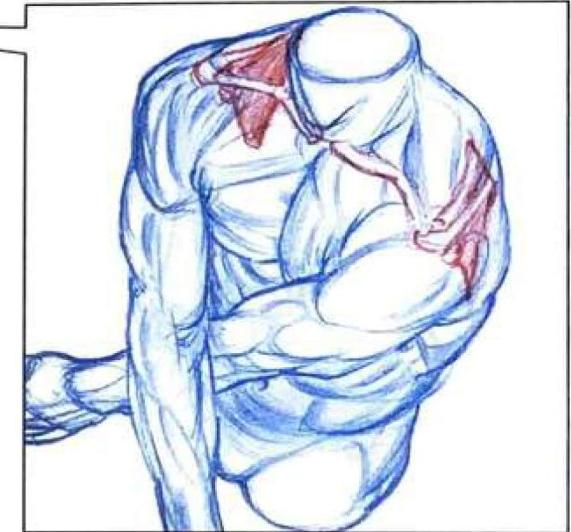
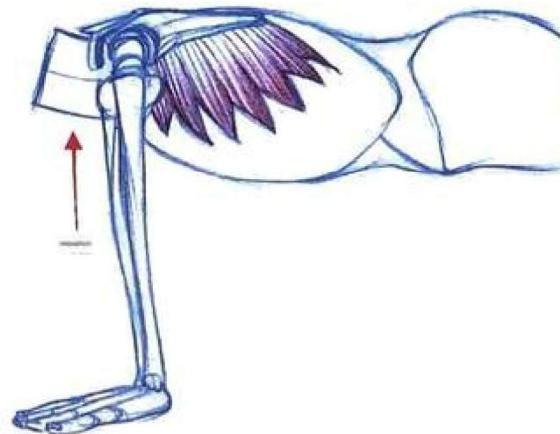
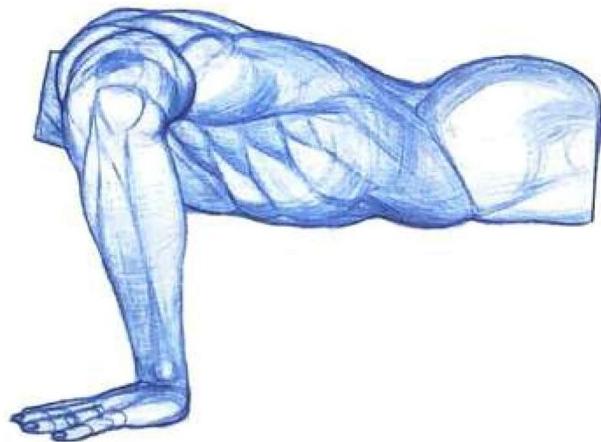
cover The serrated joint that engages the external oblique muscle is prominent outwardly when the arm is raised.



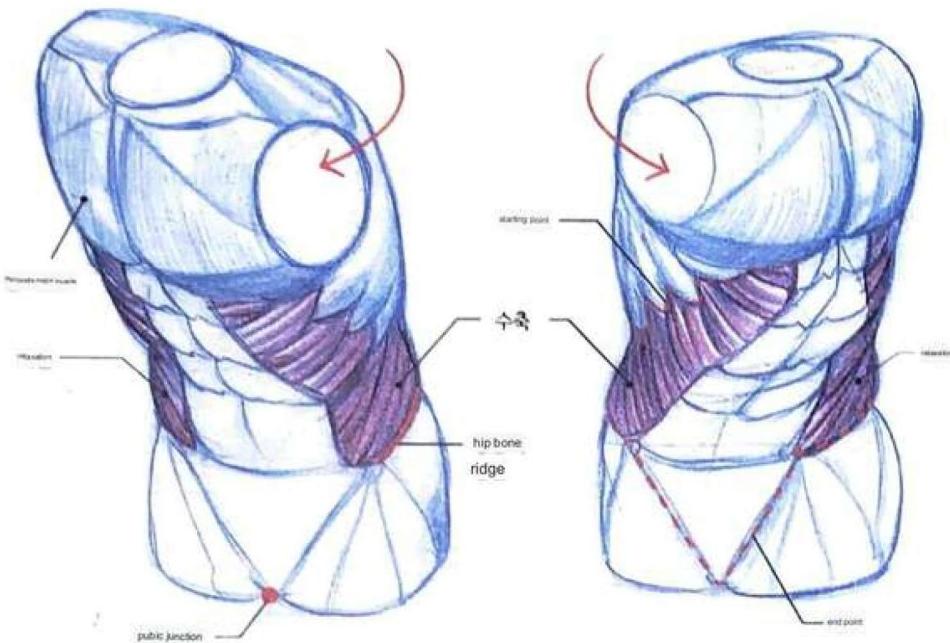
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use

The serratus anterior muscle is used to grab something or push the shoulder forward.



■ External oblique muscle that twists the waist (external oblique muscle)



starting point and ending point

The external oblique muscle has 8 branches that start from the 5th to 12th ribs and extend along the iliac crest to the pubic junction.

use

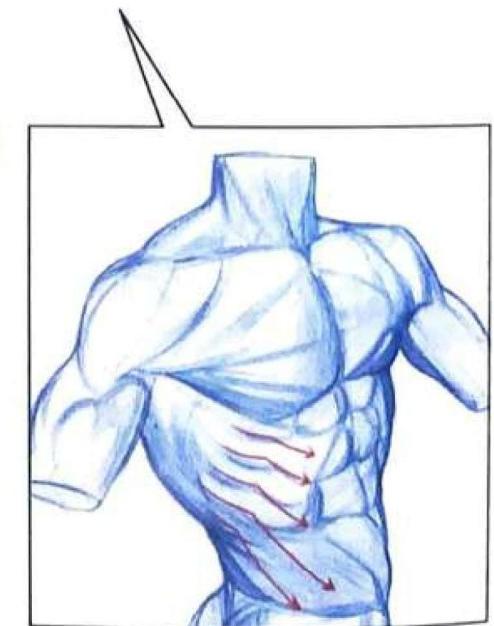
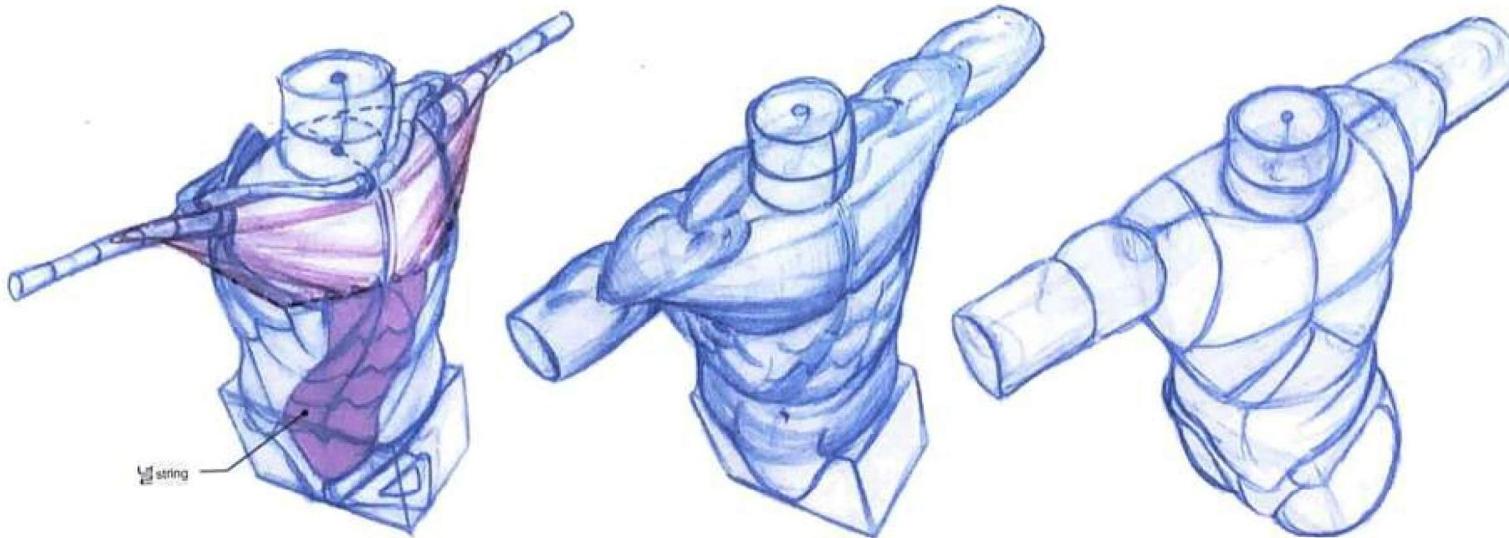
This part is used when bending the upper body sideways or twisting the torso. In the chest, the ribs protect the organs, but in the abdomen, there are only the spine for the movement of the waist, but there are no ribs, so it is vulnerable to external shocks. So instead of bones, a large area of tendon called 'strength' plays a role in protecting the internal organs of the abdomen.

overlapping order

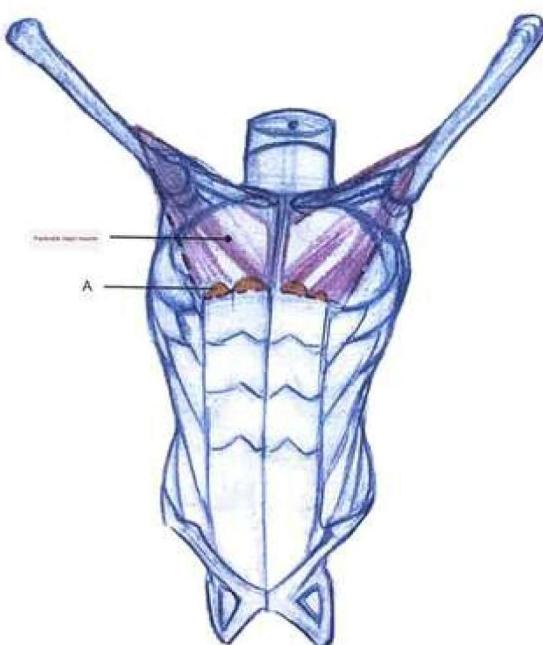
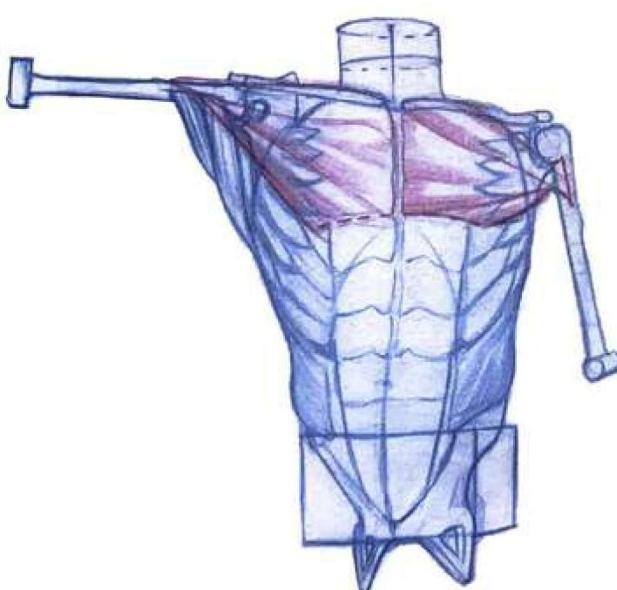
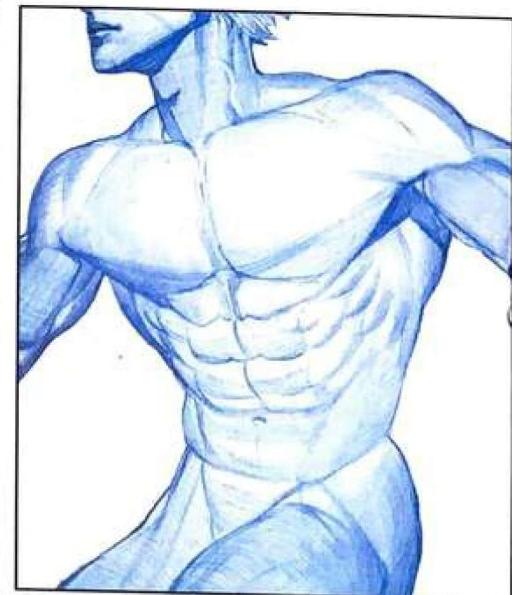
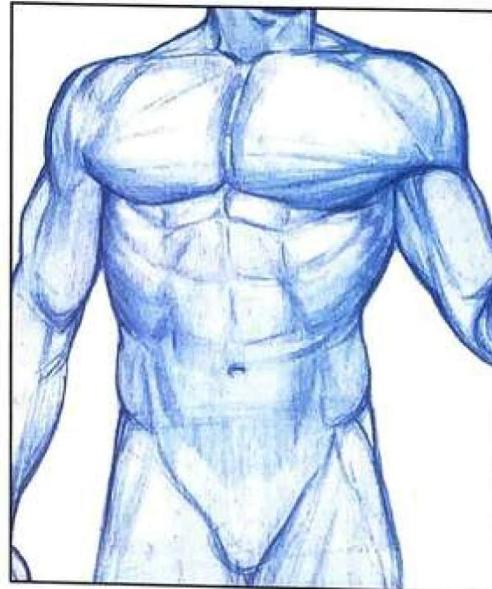
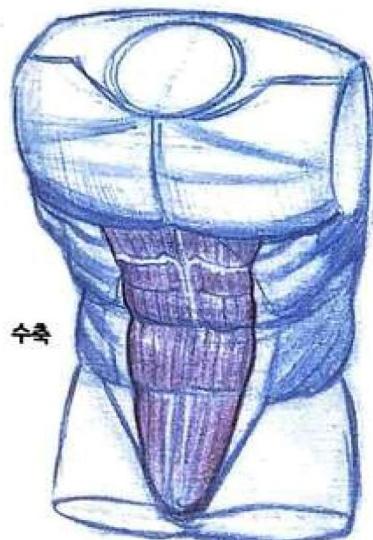
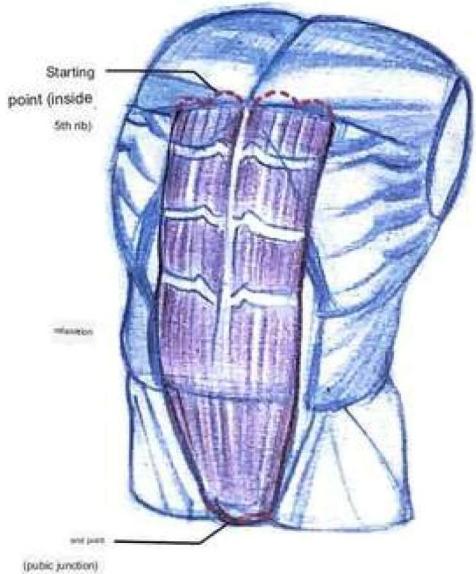
The tendon of the external oblique muscle covers the rectus abdominis (rectus abdominis) muscle shown on the right page.

특징

The slope of the muscle fibers of the serratus anterior muscle and the external oblique abdominis becomes steeper as they go down.



- Rectus abdominis muscle that bends the waist (rectus abdominis muscle)



#### starting point and ending point

It attaches to the inside of the 5th rib and extends to the pubic symphysis.

#### use

When the torso is bent forward, the rectus abdominis muscle contracts.

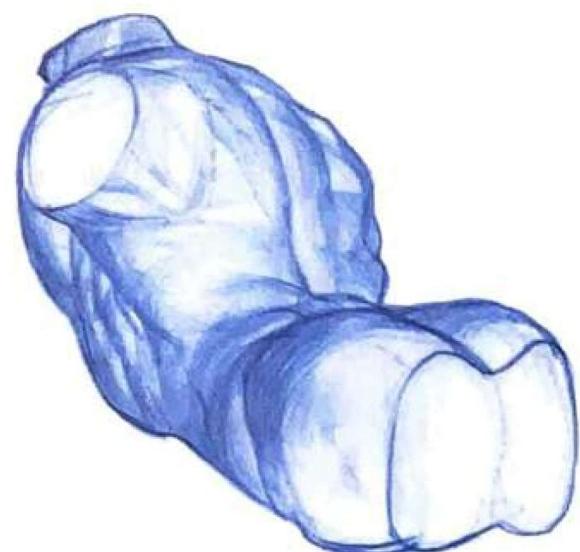
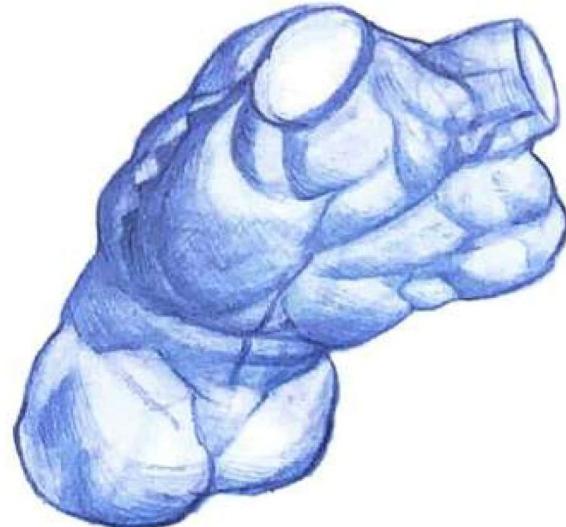
The rectus abdominis muscle relaxes when the torso leans back.

#### overlapping order

The pectoralis major muscle slightly covers A, near the origin of the rectus abdominis, and the abdominis tendon of the external oblique muscle covers the top of the rectus abdominis.

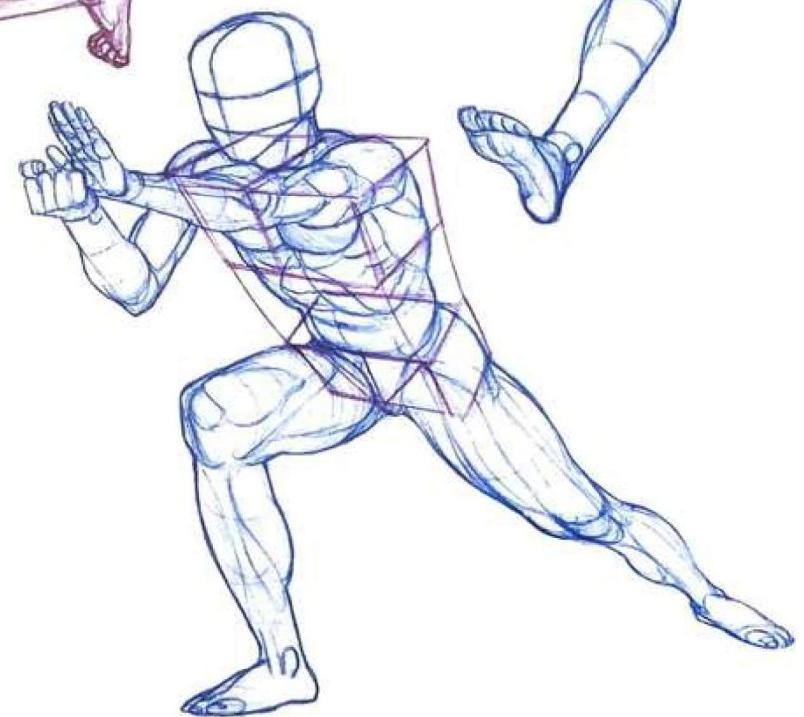
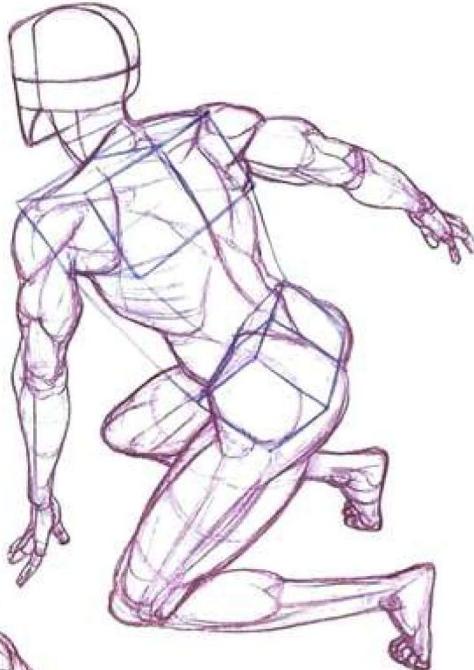
■ The flow of a man's torso covered with skin

'Look at how information from anatomy manifests itself in physical appearance.'





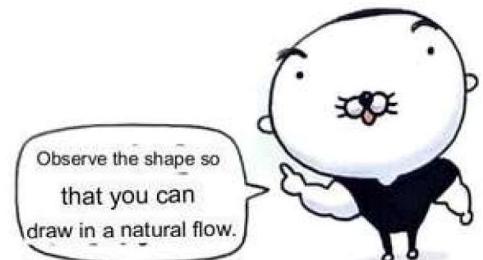
If you have learned about proportion and center of gravity through the figure drawing stage, draw a picture by applying the flow of muscles you have learned in anatomy. It takes a lot of practice, so the most important thing is not to rush and practice consistently.

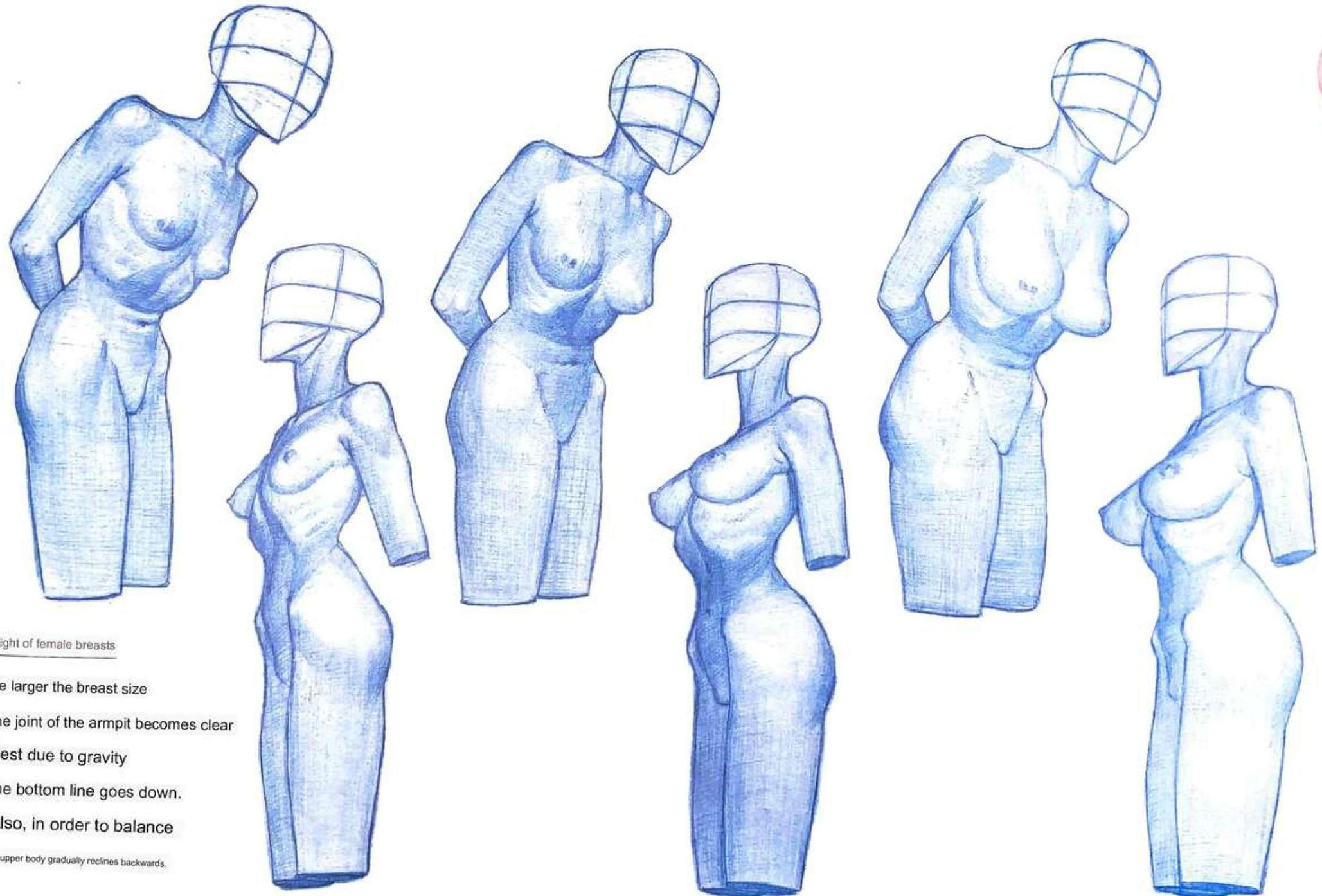


■ Women's breasts



Women's pectoralis major muscle (pectoral muscle) is located in the same place as men's, but its thickness is thin, so it is almost not exposed, and the breast made of adipose tissue is placed on top of it, hiding the shape. Therefore, the area occupied by the breast and the area occupied by the pectoralis major muscle are often viewed as the same. In reality, as shown in Figure 1, the breast area extends further down the pectoralis major muscle. Breasts are pulled or pressed according to certain postures or movements, and their shape changes as they lean toward the direction of movement. Note that the breast is fixed as shown in the red dotted line in Figure 1. As shown in Figure 2, if you look at the shape side, you can divide the chest area into two and catch the flow.





weight of female breasts

The larger the breast size

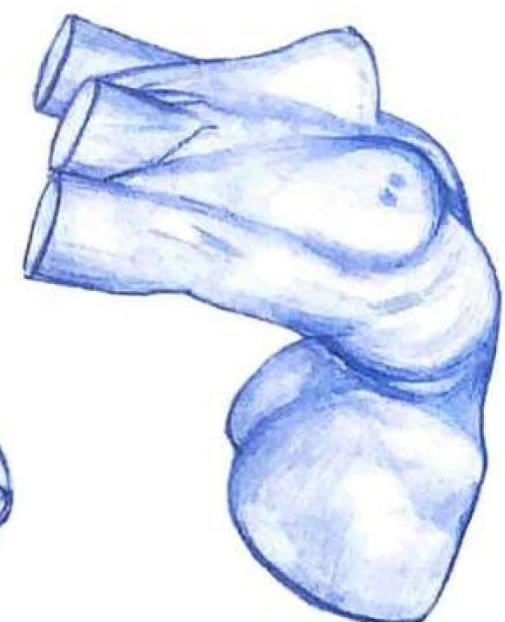
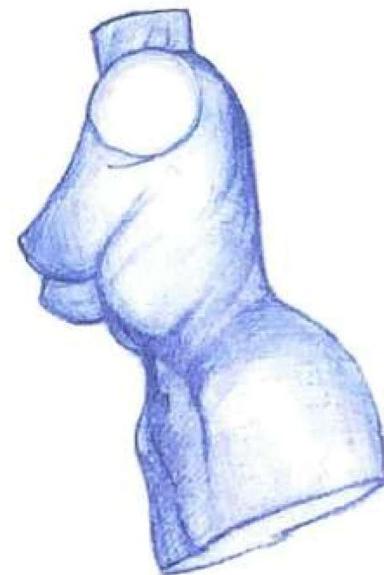
The joint of the armpit becomes clear  
chest due to gravity

The bottom line goes down.

Also, in order to balance

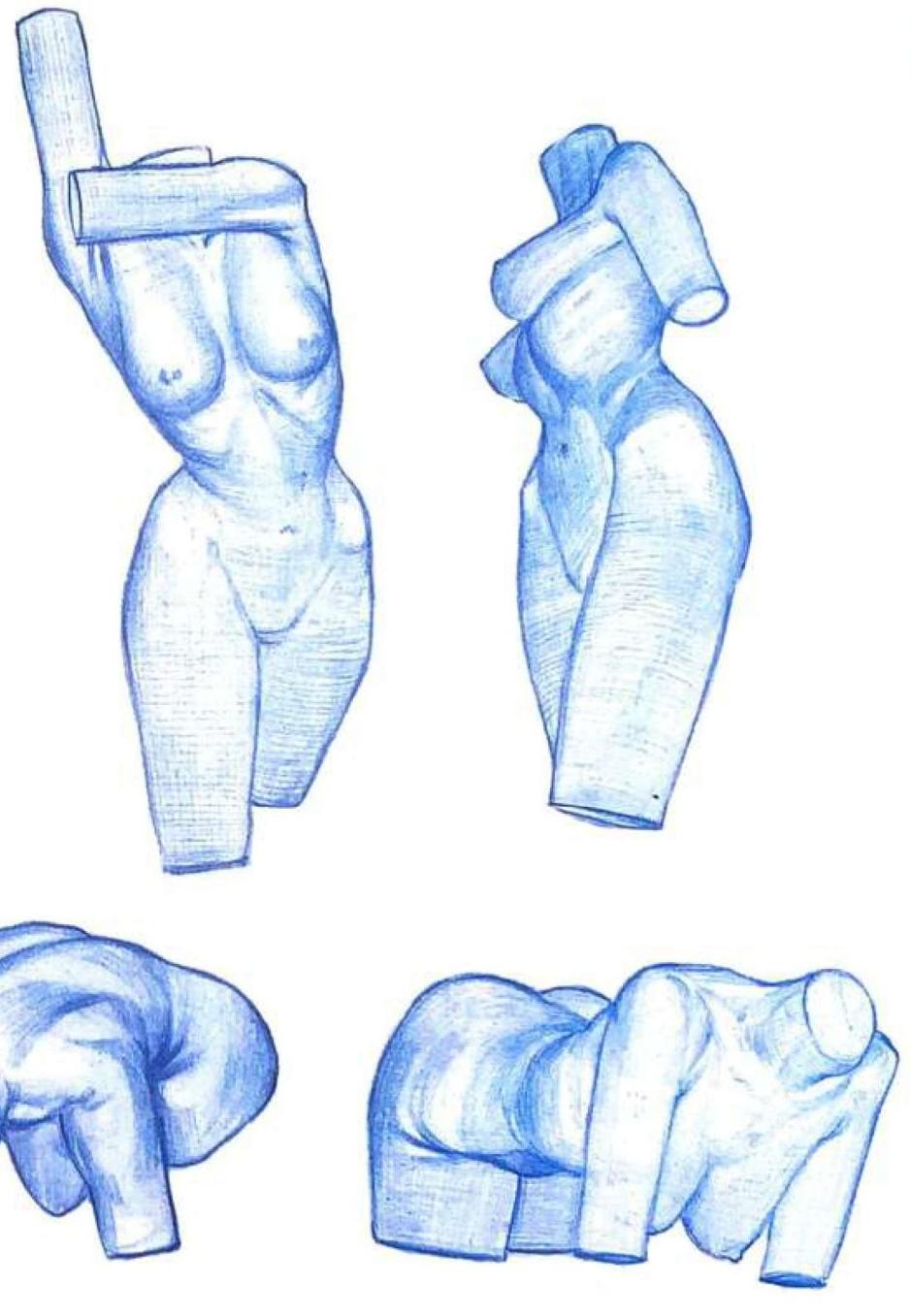
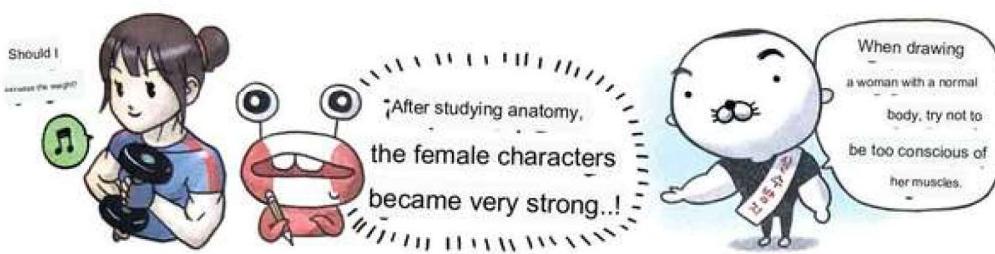
The upper body gradually reclines backwards.

■ female torso flow with skin covered



Women have thinner muscles and less elasticity than men, so there are many areas where the shape of the bone is exposed.

In terms of appearance, you can see in the picture that the collarbone, shoulder blade, and rib line appear more prominent than men. On the other hand, in the pelvis or chest area, the fat layer created under the influence of female hormones covers the shape of the bones, creating a unique curvilinear flow for women.



## 2 Location and use of arm muscles

### ■ Overall flow and names of arms

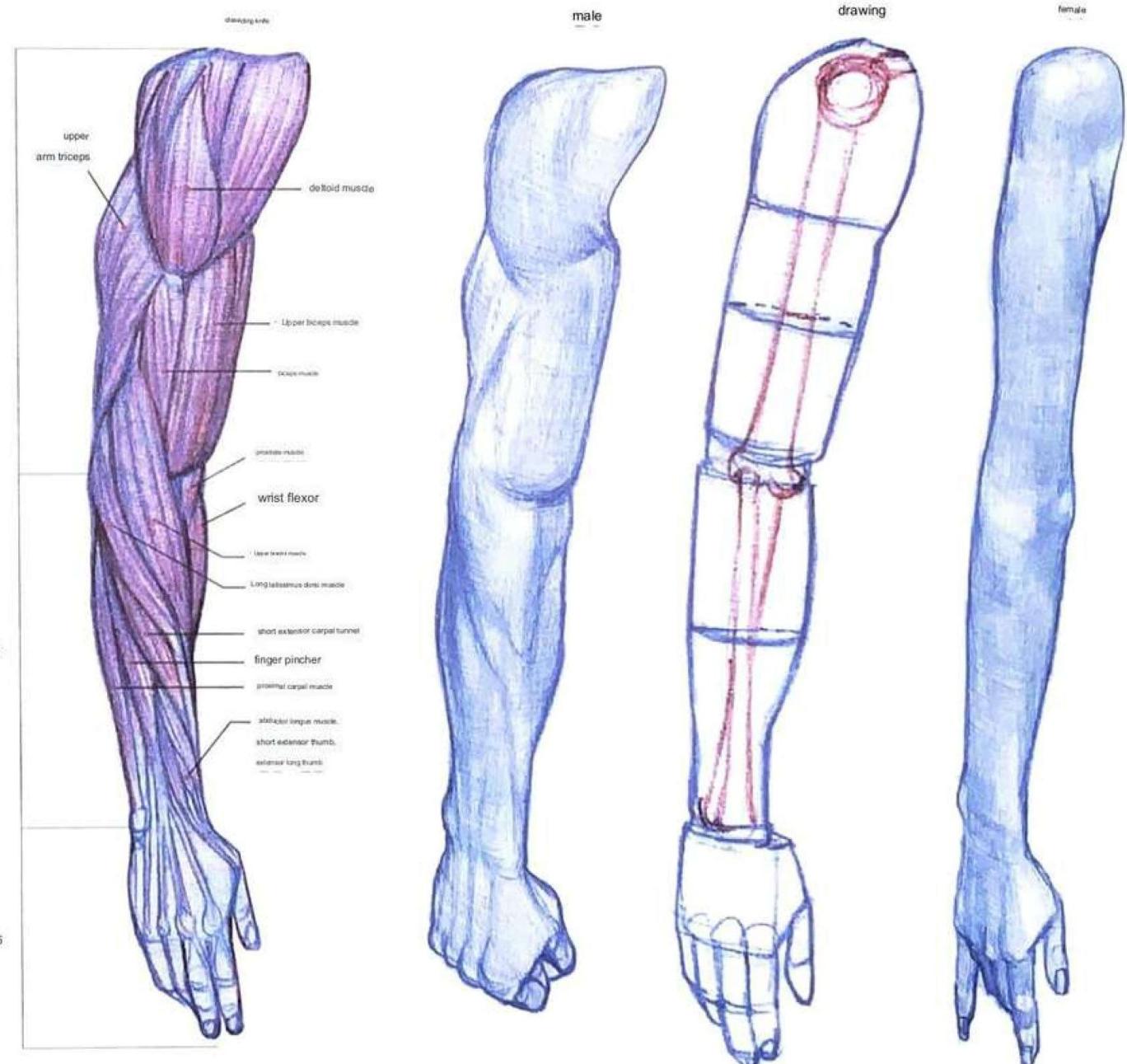
name and location of arm muscles

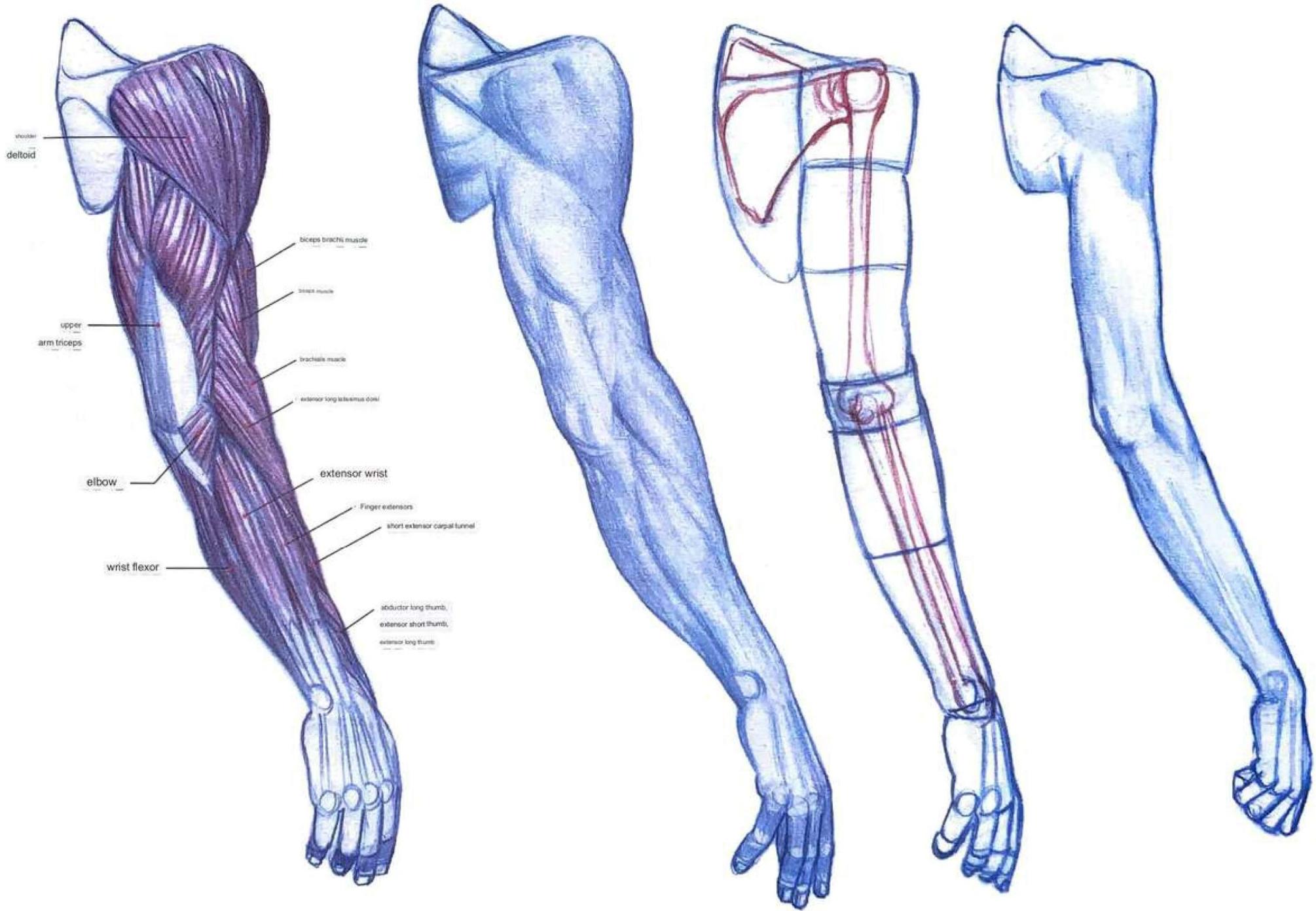
Shall we find out?

Anatomical Appearance and Reality

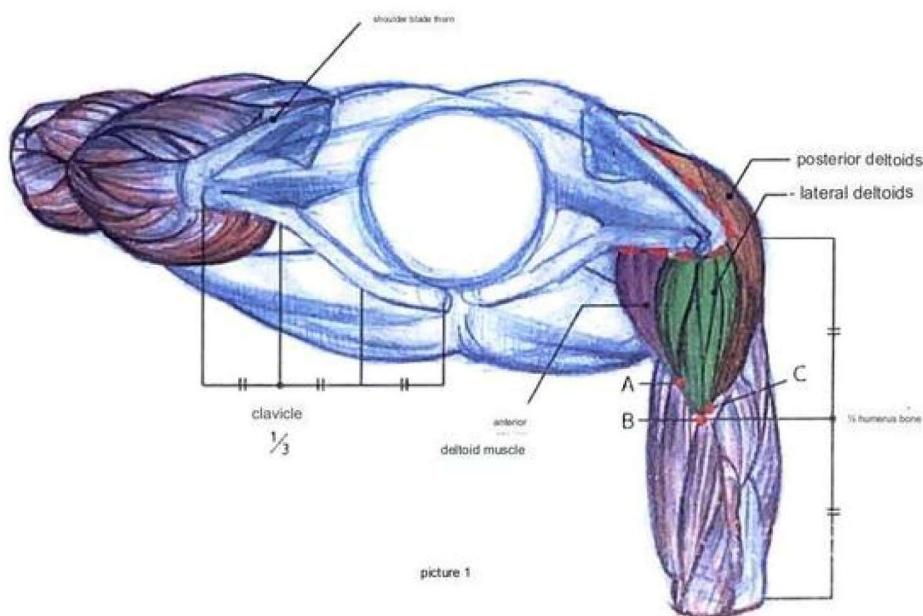
Compare appearances

Observe!



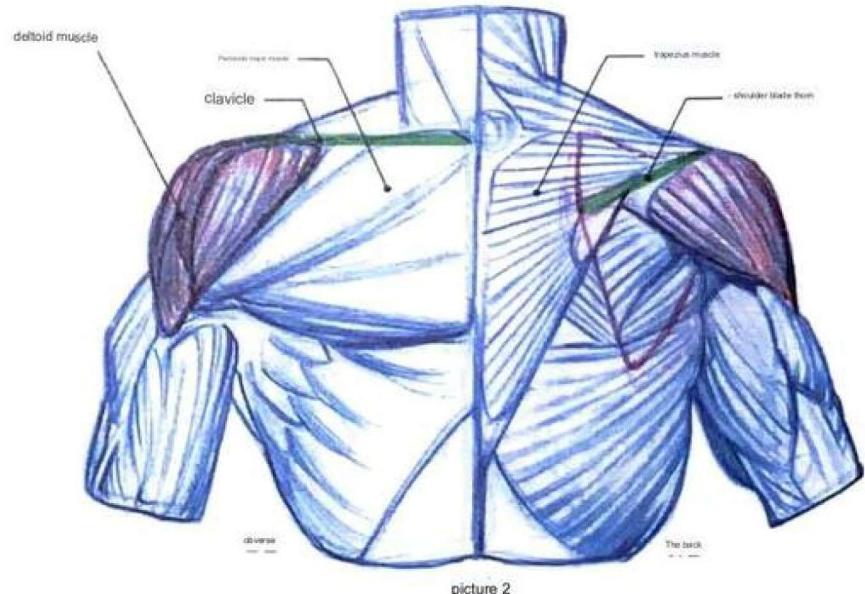


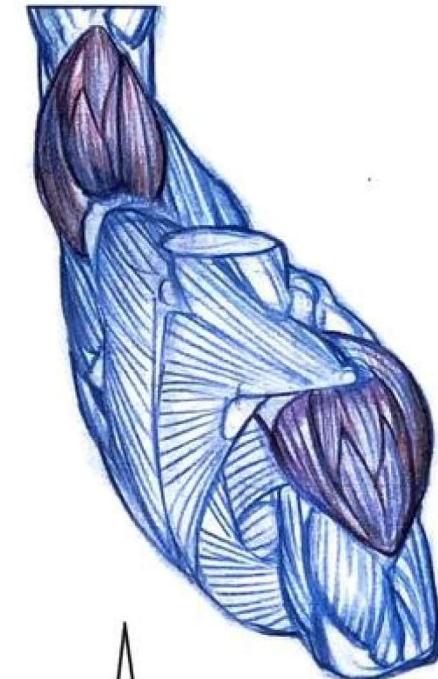
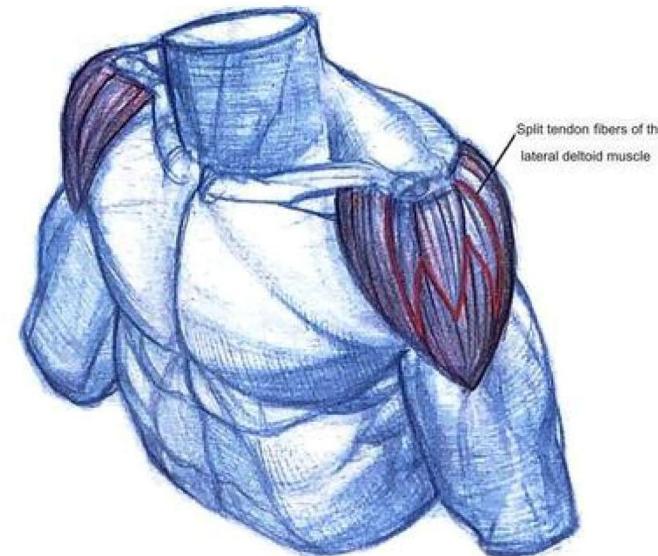
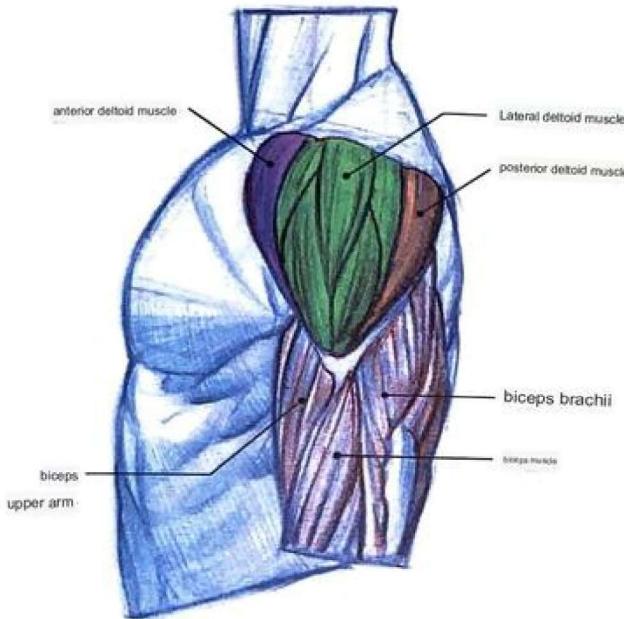
- The deltoid muscle that raises the arm (deltoid muscle)



#### Inclination of the collarbone and scapular spine

As shown in Figure 2, comparing the position and appearance of the muscle back and forth shows the structure and connection of the muscle in three dimensions. It helps you understand. When viewed from the front, the deltoid is connected to the clavicle, so the upper surface is horizontal, and from the back, the scapula bends down obliquely along the slope of the scapula.



use

The deltoid muscle is responsible for lifting the arm around the shoulder. The anterior deltoid lifts the arm forward, the lateral deltoid lifts the arm sideways, and the posterior deltoid lifts the arm backward.

overlapping order

The deltoids include the pectoralis major, biceps brachii, triceps brachii, It is located at the top of the infraspinatus, teres minor, and teres major muscles.

functions

The lateral deltoid muscles have split muscle fibers like meshed crocodile teeth, which produce strong force even though the length of contraction is shorter than that of general muscles. As shown in the picture on the far right, when the arm is raised, the deltoid muscle is a structure that goes over the back.



- Biceps brachii muscle (brachial muscle), biceps brachii muscle (biceps brachii muscle), brachioradialis muscle (brachioradialis muscle), long latissimus carpal extensor muscle (lateral carpal extensor) that bends the arm

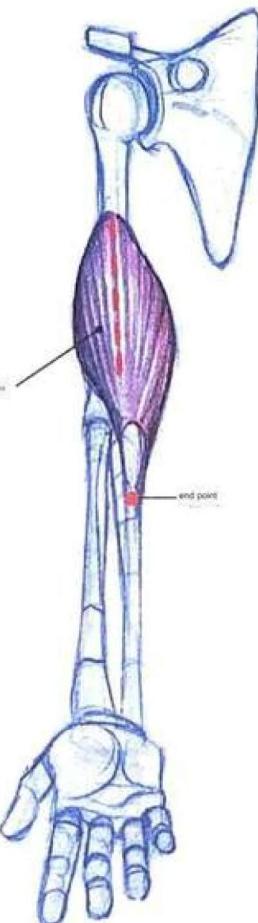
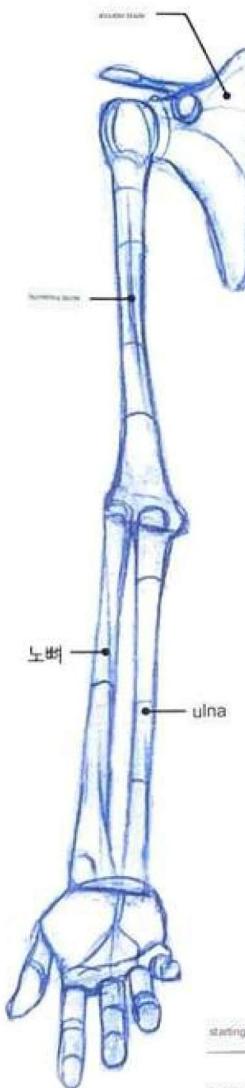


Figure 2-1

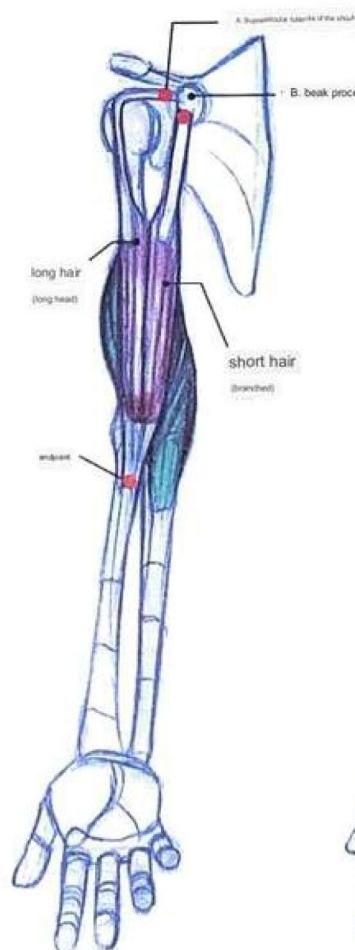


Figure 2-2

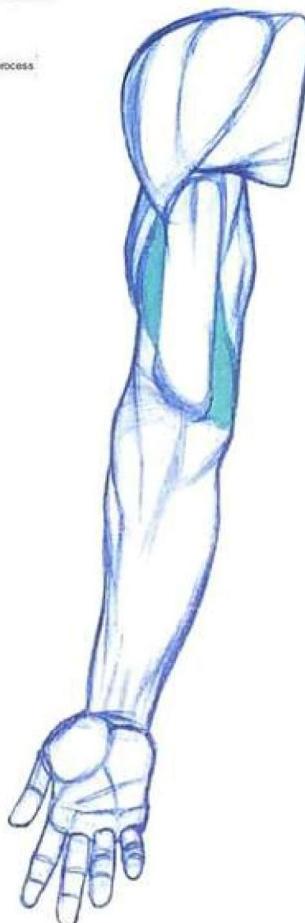


Figure 2-3

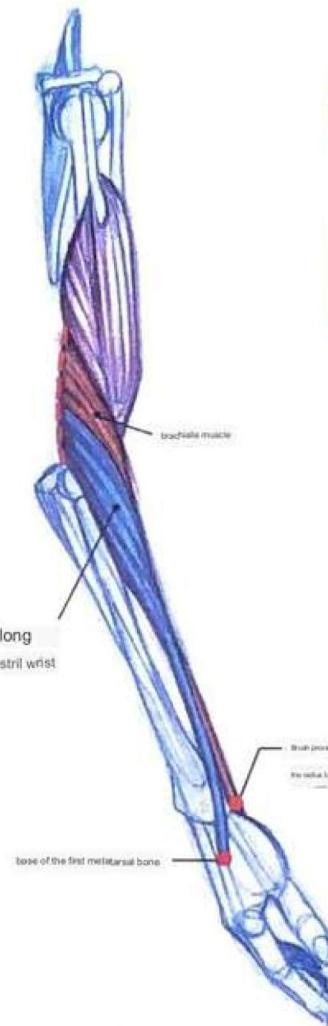


Figure 3-1

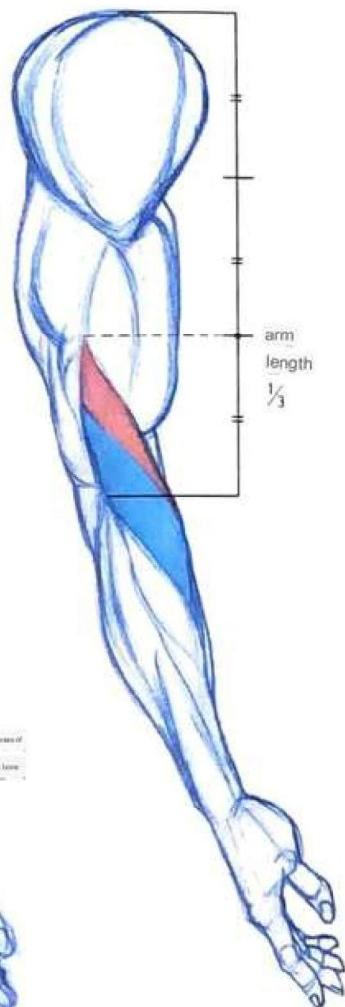


Figure 3-2

picture 1

The brachialis muscle begins at the dotted line on the side of the humerus in Figure 2-1 and ends at the endpoint marked on the ulna. As shown in Figure 2-2, the biceps brachii muscle is divided into long and short prongs. The long prong starts from the joint supra-articular tubercle (A) of the scapula, and the short prong starts from two points, the beak process (B), and ends at a point on the radius bone. Connected, the biceps brachii muscle covers the top of the brachialis muscle and controls the brachialis muscle.

Most of it is covered. The brachialis muscle is wider than the biceps brachii muscle, so it sticks out on both sides as shown in Figure 2-2. Let's check the final position through Figure 2-3 to see how it looks in real life. The brachioradialis muscle and extensor carpi longus longus muscle in Figure 3-1 start at about the length of the upper arm. The brachialis muscle goes to the brush process of the radius bone and attaches, and the long radius carpal extensor muscle ends at the base of the first metatarsal bone.

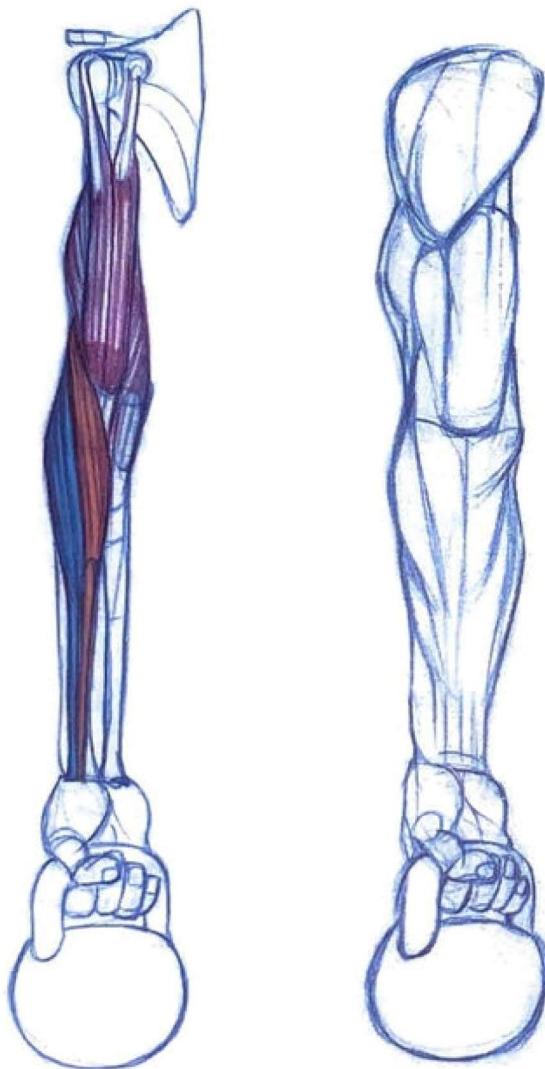


Figure 4-1

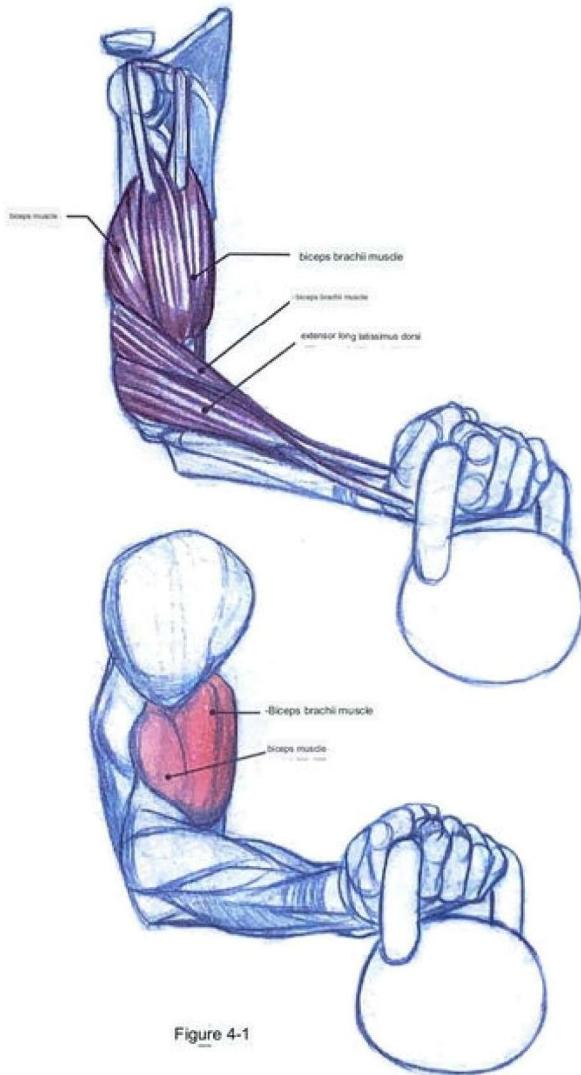


Figure 4-1

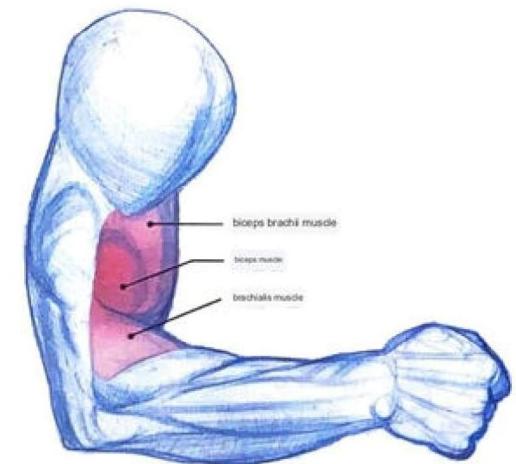


Figure 4-2

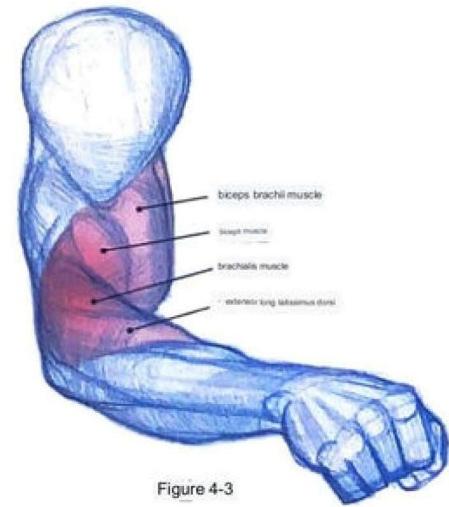


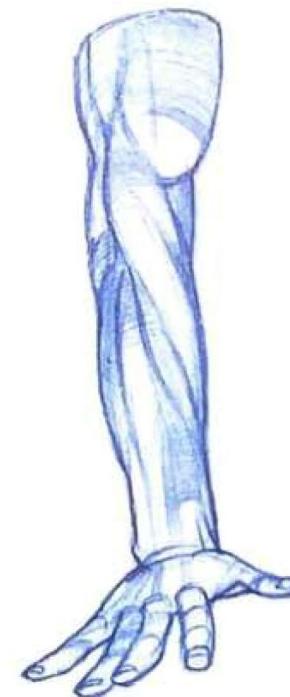
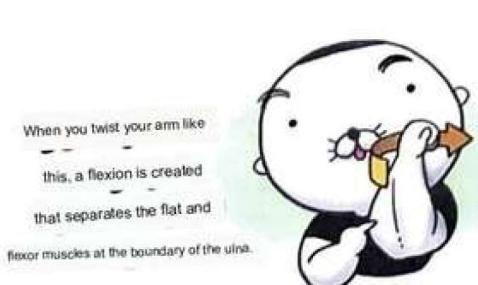
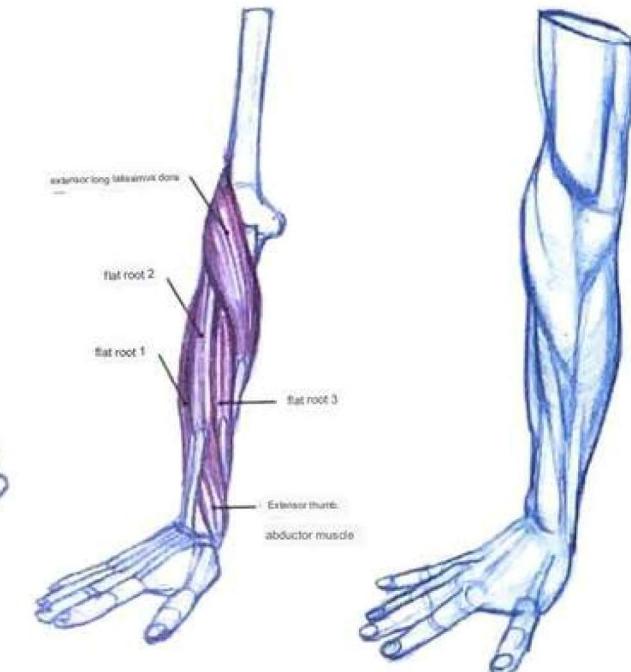
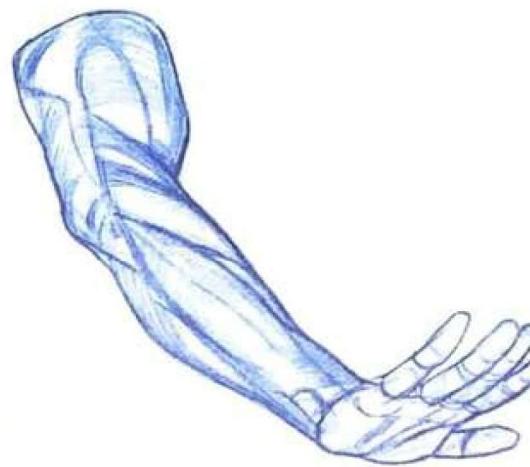
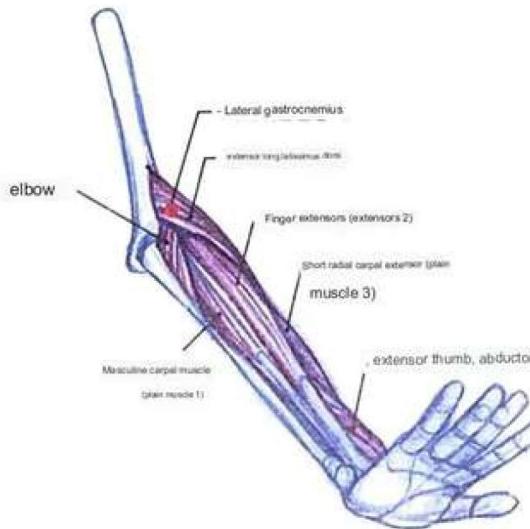
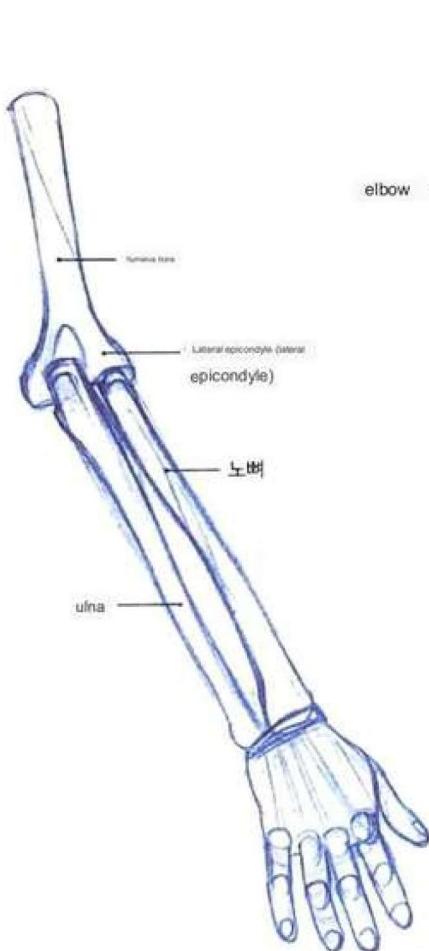
Figure 4-3

use

When you bend your arm with your palm facing the sky, as shown in Figure 4-1, you engage the brachii and biceps brachii muscles. As shown in Figure 4-2, when the arm is bent with the thumb pointing up, three muscles are used: the brachii muscle, the biceps brachii muscle, and the biceps brachii muscle. As shown in Figure 4-3, the back of the hand faces the sky.

When the arm is bent in this state, all four muscles are used: the brachii muscle, the biceps brachii muscle, the brachii longus muscle, and the long latissimus carpal extensor muscle. The red area in the picture is the muscle that is mainly used as the color is darker. Because the muscles are shifted depending on the direction of the hand, the silhouette of the arm and the muscles that are mainly used are also different.

■ Carpal extensor muscle, extensor thumb muscle, abductor muscle that flexes the wrist



#### starting point and ending point, usage

In order to easily understand the various muscles that flex the wrist

Let me explain by tying a few muscles together.

In this book, the masculine wrist extensors and finger extensors,

We will refer to the short extensors of the carpal tunnel as 'extensors 1, 2, and

3'. The extensors originate from the lateral epicondyle of the humerus.

Extensor muscles 1 and 3 attach to the back of the hand, and extensor

muscle 2 passes through the back of the hand and attaches to four branches from the

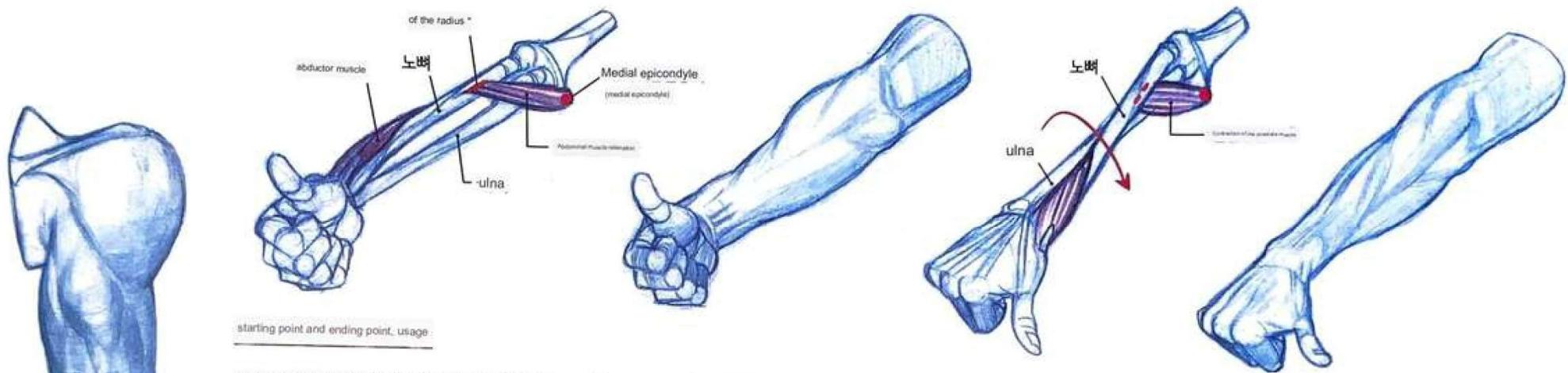
index finger to the little finger. The extensors are used to extend the fingers

except the thumb and to flex the wrist back. As the name suggests, the extensor thumb

and abductor muscle are used to spread and extend the thumb. They come

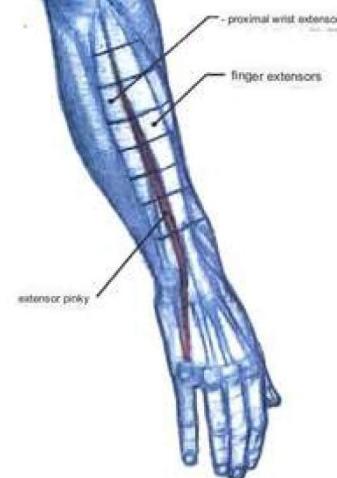
out between extensors 2 and 3 and attach to the thumb.

■ Pronator pronator muscle that rotates the wrist



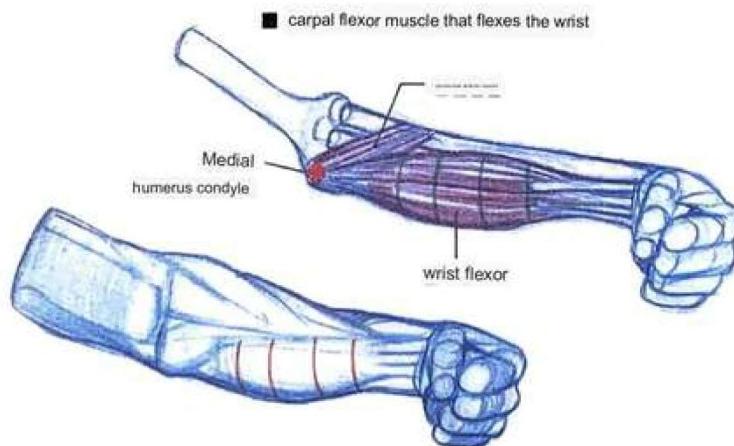
starting point and ending point, usage

The supraspinatus prominator originates from the medial gastrocnemius and attaches to the weak point of the radius. The prostrate prominator is a muscle used to rotate the wrist. During rotation, the ulna is fixed and only the radius rotates.



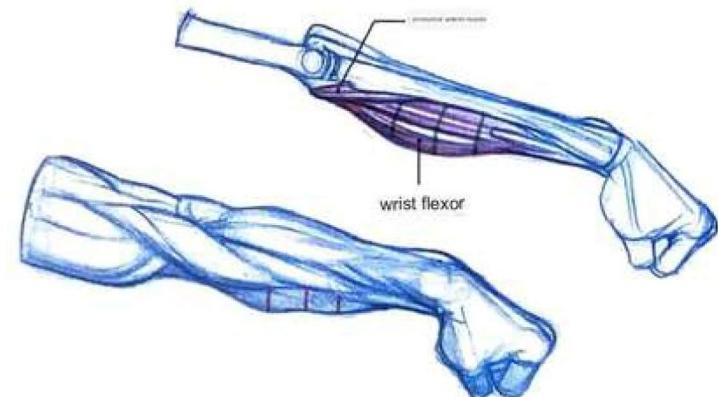
Between the posterior neck extensor and the finger extensor

The extensor pinkie muscle is present and will not be discussed in this book because this muscle is small and barely visible.

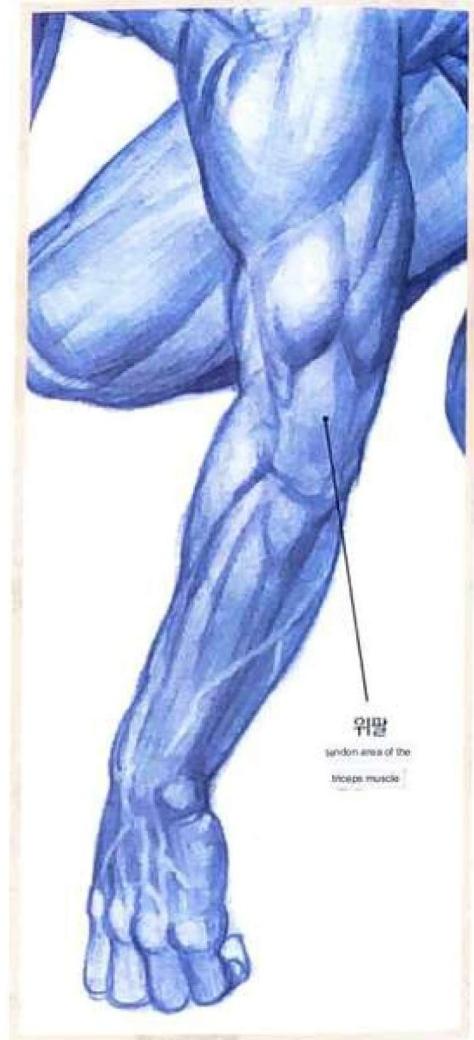
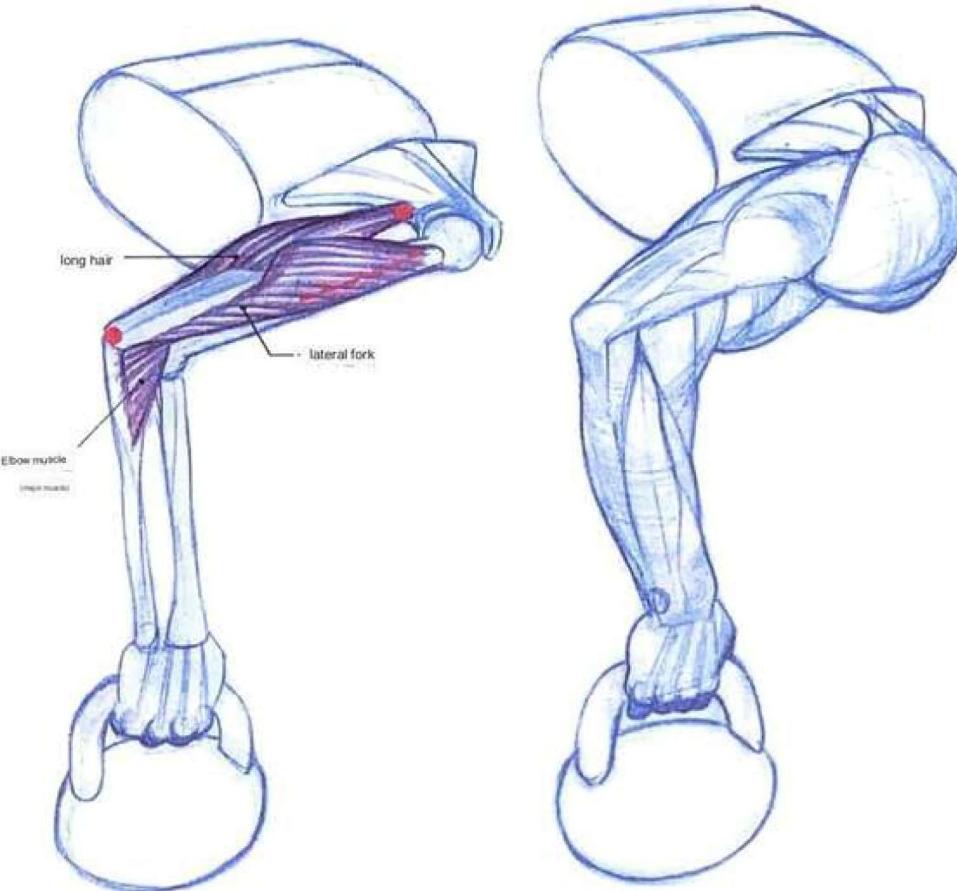
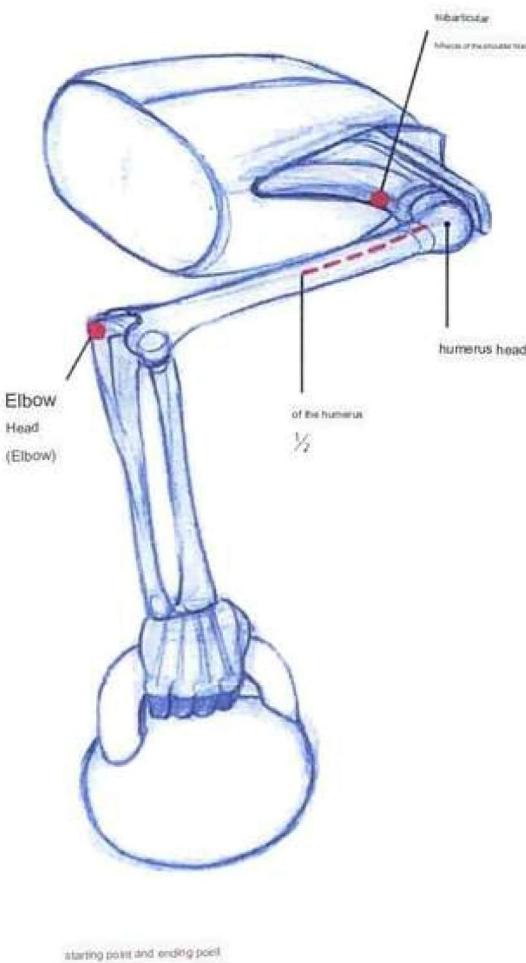


starting point and ending point, usage

The muscles that bend the hand are classified into six, and in this book, we will group them into one and call them 'carpal flexors'. It's because it's tied to one flow in appearance. The carpal flexors originate on the medial epicondyle of the humerus, pass through the wrist and spread to each finger, and serve to flex the fingers and wrist.



## ■ triceps brachii (triceps brachii)

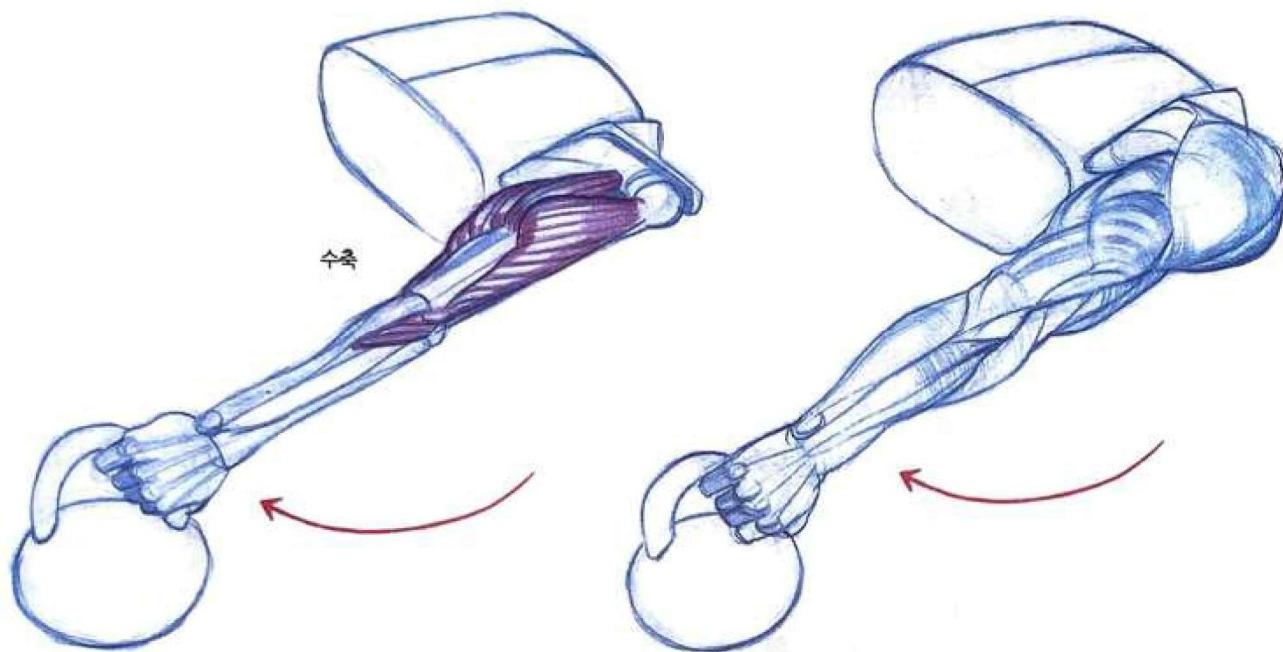


Characteristics of the brachial triceps

As the name implies, the brachial triceps muscle consists of the inner branch, the family branch, and the long branch. Long forked shoulder blade

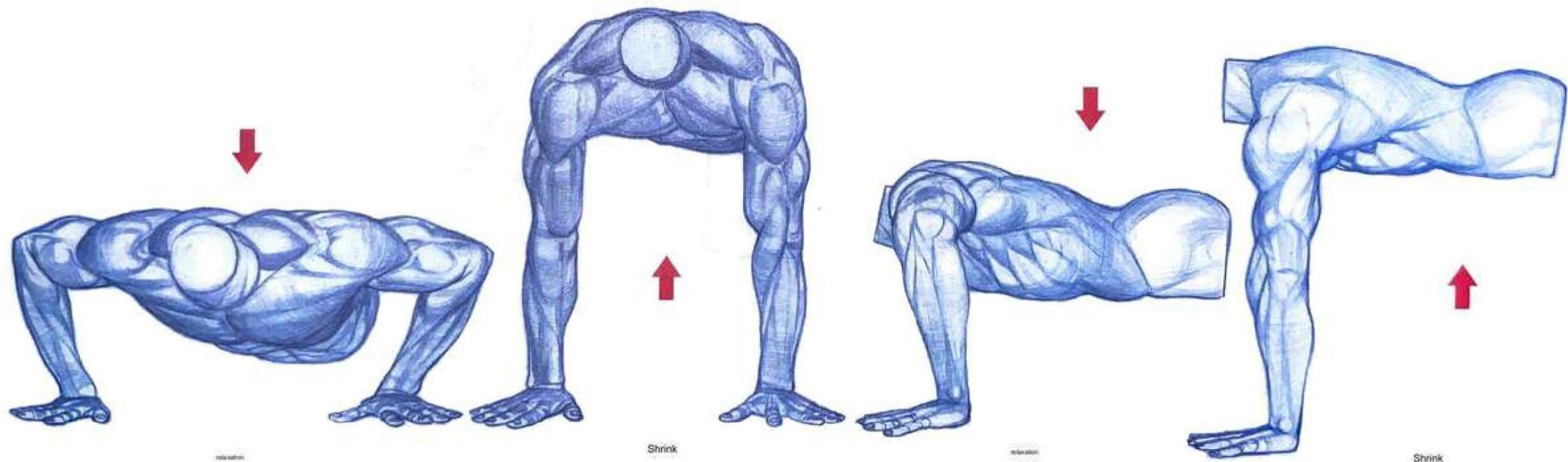
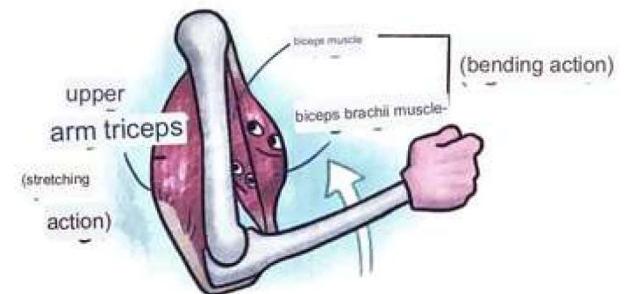
In the subarticular tubercle, the family branch starts from the lower part of the humerus head to the weak point of the humerus and attaches to the elbow head. The inner prongs are hidden by the long prongs and are difficult to see in the family, so I will omit them. In the final look of the arm, most of the origin of the triceps will be covered by the deltoid.

Unlike other muscles, the brachial triceps has a wide tendon area. As the muscle develops, the flat tendon area and the sinew are contrasted, and the boundary is clearly divided.



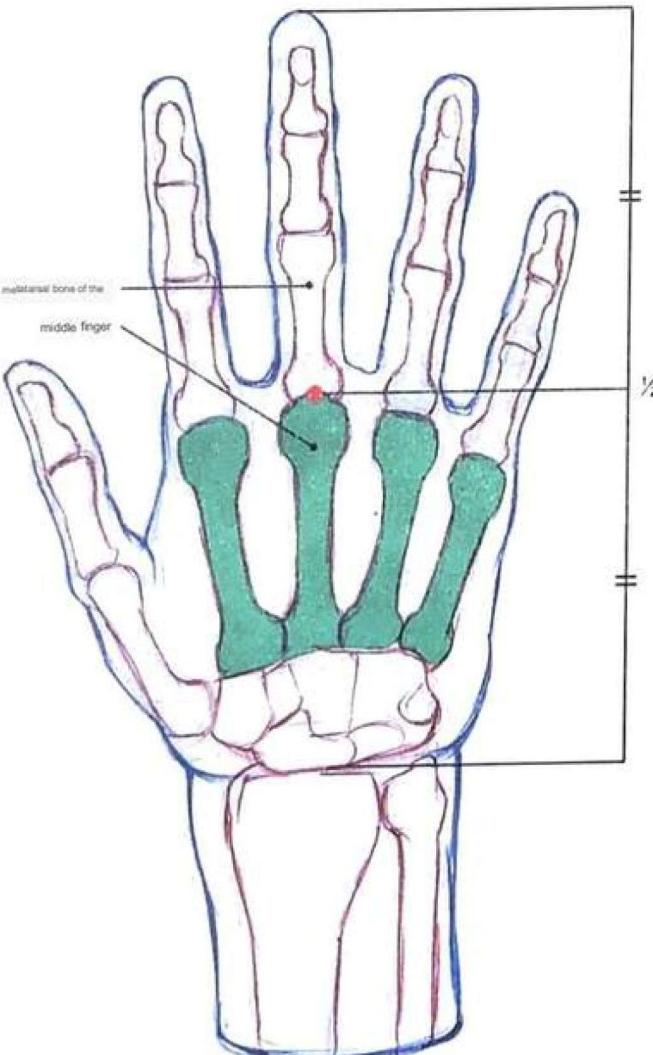
## use

The triceps brachii works opposite to the biceps brachii and the biceps brachii to extend the arm backwards. When you do push-ups, the pectoralis major muscle in your torso and the triceps brachii muscle in your arms contract, so you can raise your body off the floor.



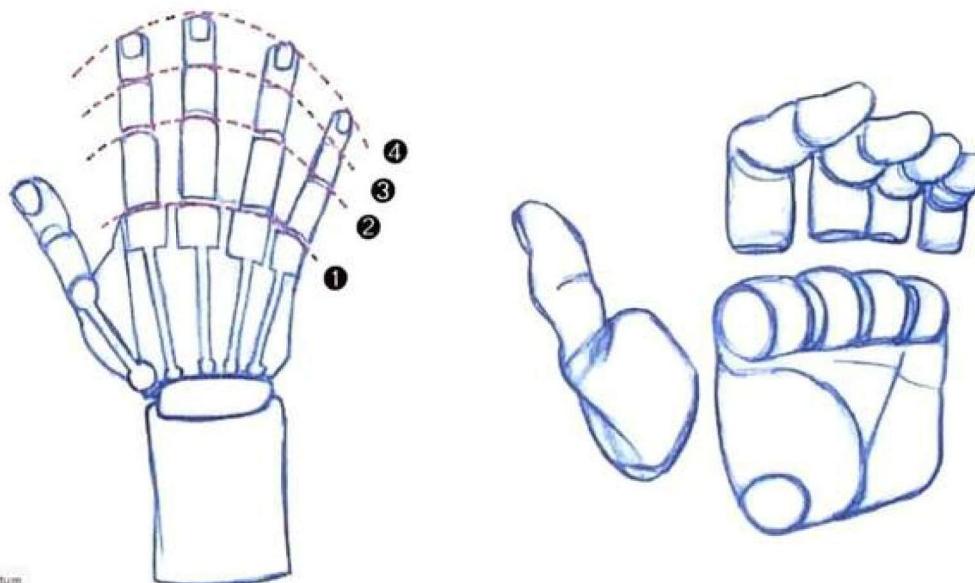
### 3 Structure and movement of the hand

#### ■ Hand proportions and division



#### The evolution and shape of the hand

What part of your body do you see the most? Most people think of a face, but the correct answer is a hand. So, when many artists create and draw the human body, the part they draw that resembles their own body the most is the hand. Unlike other animals, humans have freed their hands through bipedalism, and they have been able to grab objects and make tools with them for hunting. In order for humans with weak physical abilities to hunt animals, they needed a weapon that could attack from a long distance. Therefore, by developing weapons such as spears, they were able to hunt animals that were much stronger than themselves, and based on this hunting technology, mankind was able to survive to this day. The function of the thumb had to be developed in order to make precise tools and throw them in precise locations. So, compared to other apes, humans evolved to have a longer thumb ratio and shorter four fingers, resulting in the present hand.

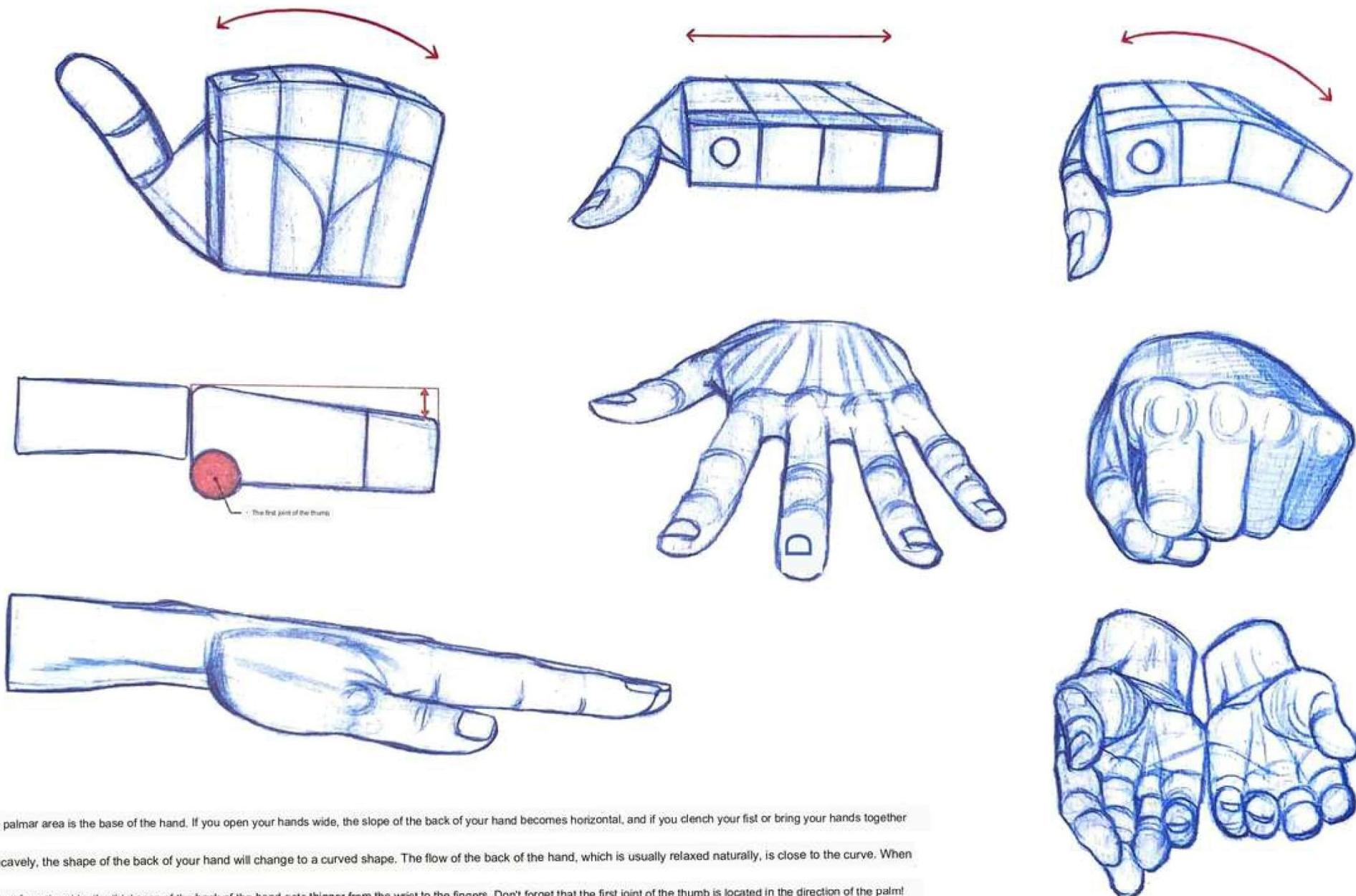


#### Hand proportions and structure

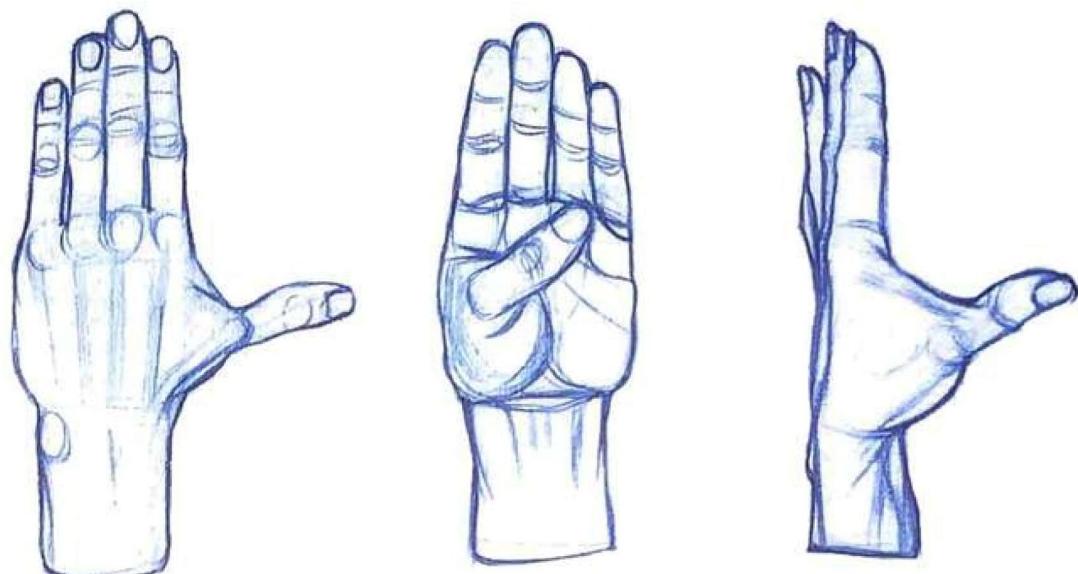
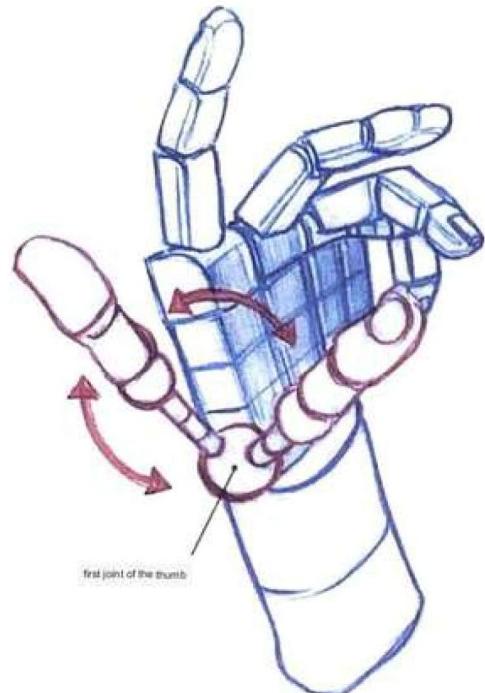
In this chapter, I will explain the hand in an easy-to-understand way, rather than an anatomical approach.

In the picture on the left, the red dot where the metatarsal bone and the first phalanx of the middle finger meet is the point along the length from the tip of the palm to the tip of the middle finger. Also, by connecting the joint points of each finger joint, a parabola is drawn around the middle finger. Line 1 in the middle picture is also curved in the same flow as the other dotted lines, so be careful not to draw it as a straight line. If you look at your hand structurally, you can think of it as the palm, thumb, and other four fingers.

■ palm area



The palmar area is the base of the hand. If you open your hands wide, the slope of the back of your hand becomes horizontal, and if you clench your fist or bring your hands together concavely, the shape of the back of your hand will change to a curved shape. The flow of the back of the hand, which is usually relaxed naturally, is close to the curve. When viewed from the side, the thickness of the back of the hand gets thinner from the wrist to the fingers. Don't forget that the first joint of the thumb is located in the direction of the palm!

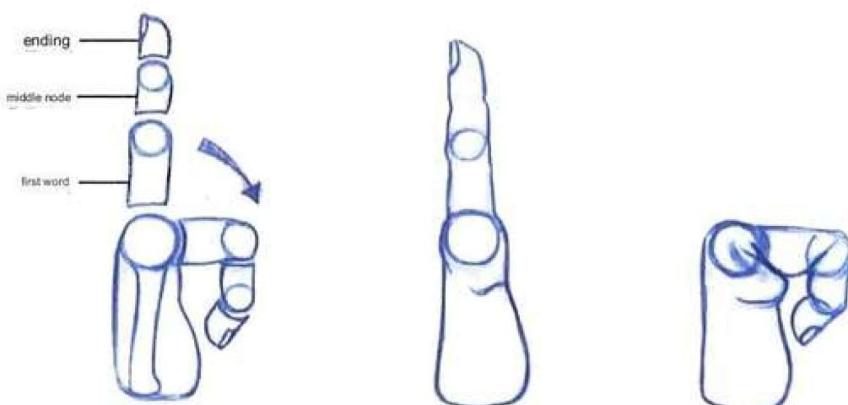
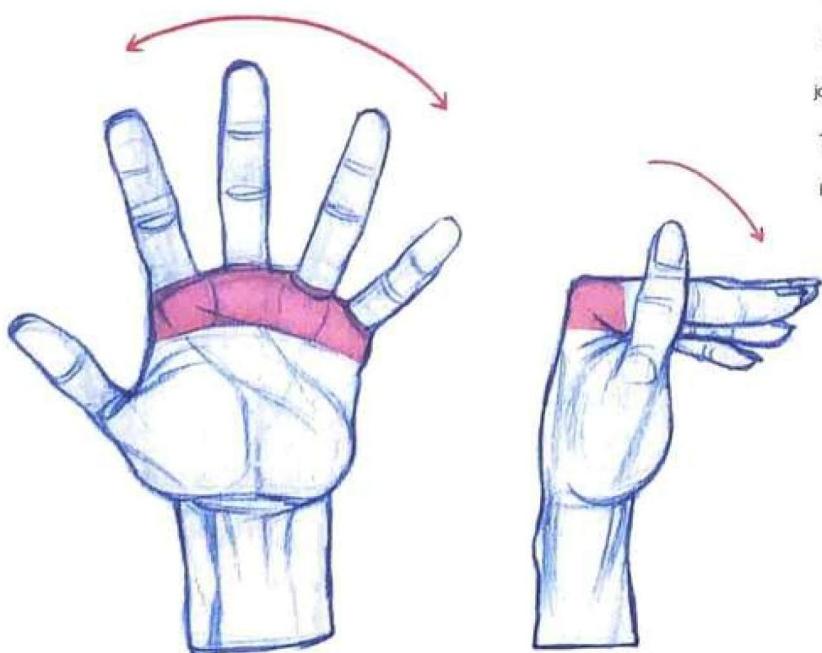


■ Different movements of the fingers

The thumb evolved to have a greater degree of freedom than other fingers in order to grasp objects or make tools. The first joint of the thumb rotates only to the inside of the palm and does not bend to the back of the hand, so it is a 'saddle joint' similar to the 'ball joint'. Since the first joint of the thumb is the axis of the complex shape of the hand, you should carefully observe the movement of the thumb.

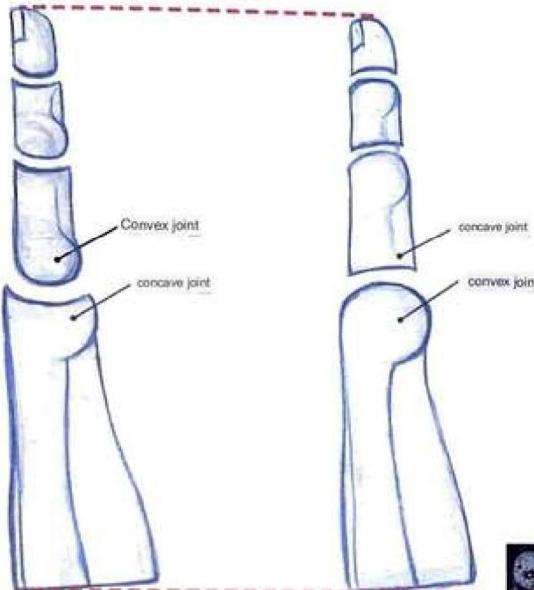
The movement of the first phalanx of the remaining four fingers is characterized by widening to the side and bending forward.

Intermediate and distal joints are hinge joints that can only move backwards and forwards by bending and straightening them.

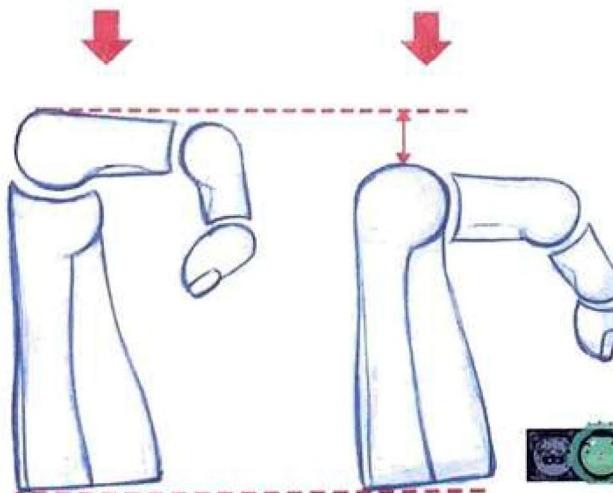


shape of the finger joint

picture 1



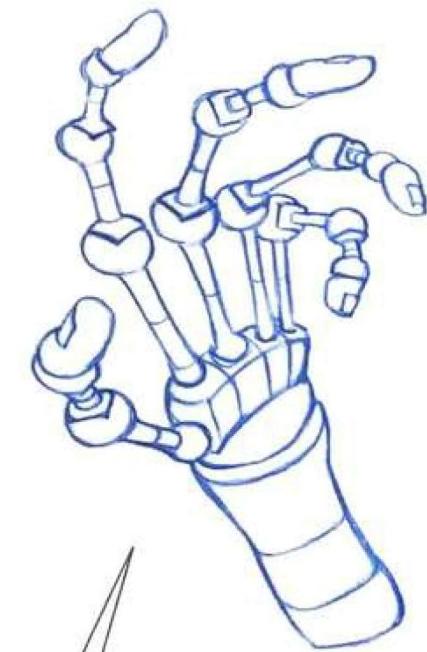
picture 2



### ■ Convex and concave joints

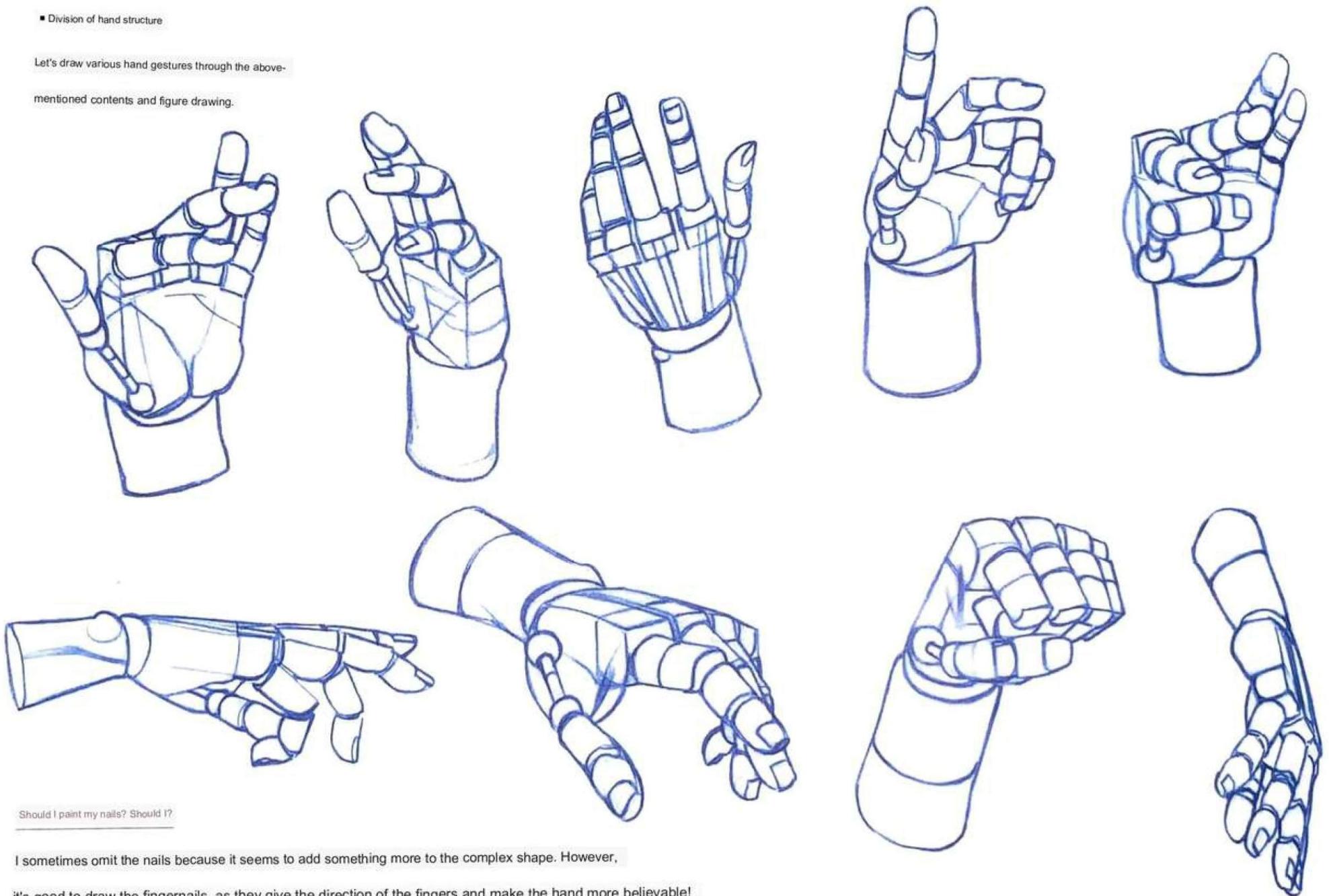
Most of the joints in the human body work by combining a convex joint on one side and a concave joint on the other side that accepts it. Looking at Figures 1 and 2, let's look at the difference in movement depending on the location of the convex and concave joints. Figure 1 shows a finger before bending with the positions of the concave and convex joints opposite to each other. At this time, you can see that the length of the hands is the same. However, bending the fingers as shown in Figure 2 caused a difference in the length of the back of the hand. The right hand in Figures 1 and 2 shows the correct joint structure. Depending on the position of the convex joint and the concave joint, the shape of the hand changes when the movement progresses, so you need to know the location of the joint well. The fingers are especially important because they have a lot of joints.

The protruding part here is  
the convex joint of the metacarpal bone.



■ Division of hand structure

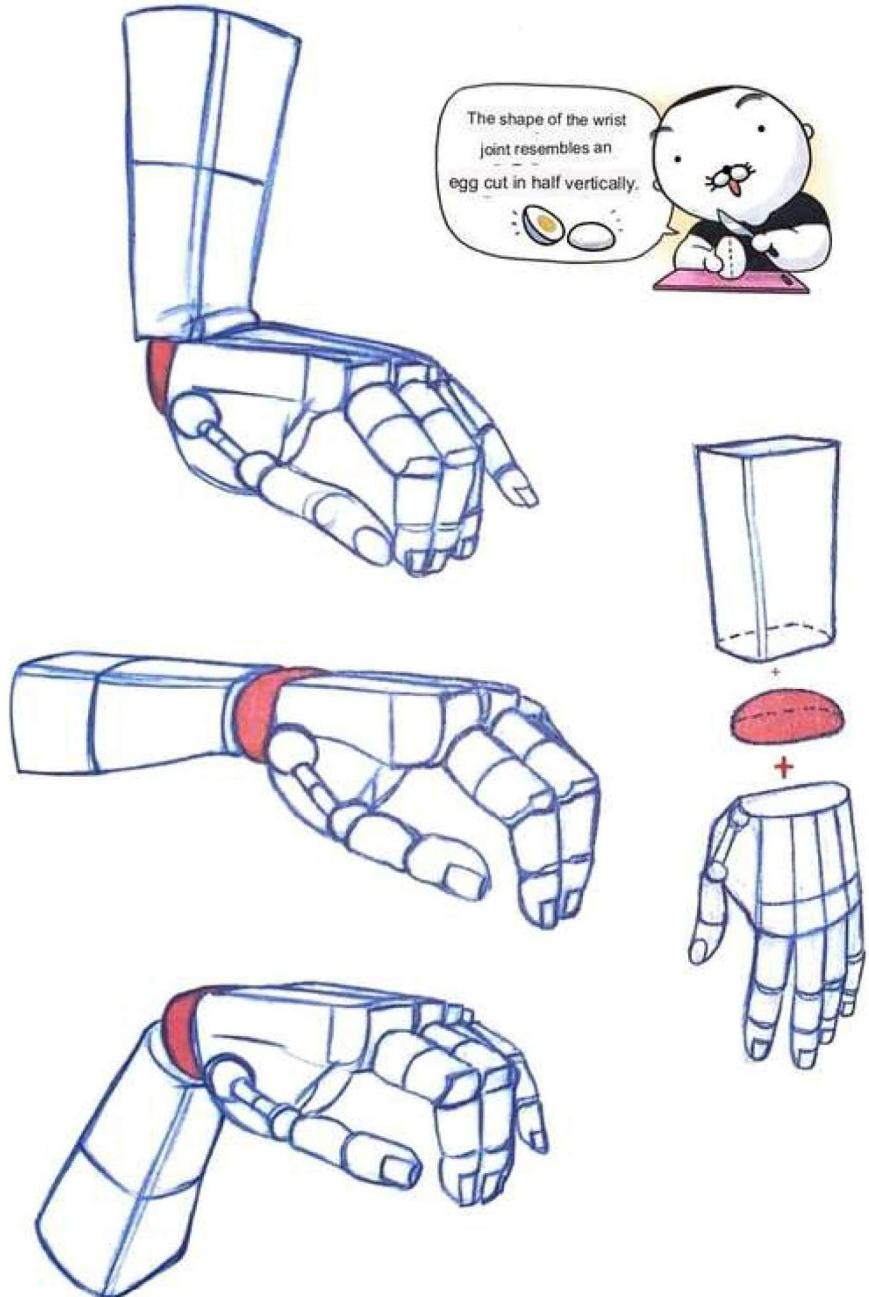
Let's draw various hand gestures through the above-mentioned contents and figure drawing.



Should I paint my nails? Should I?

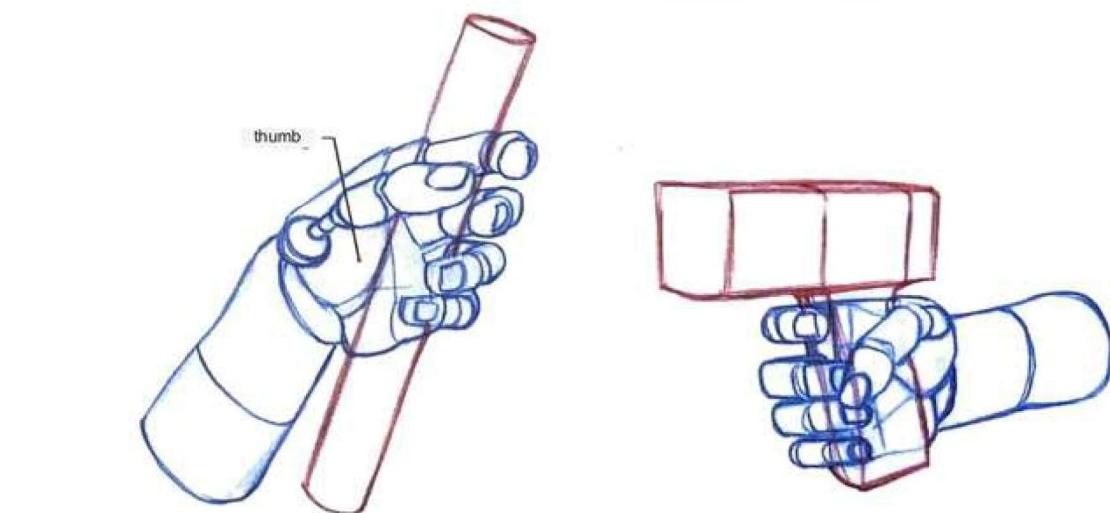
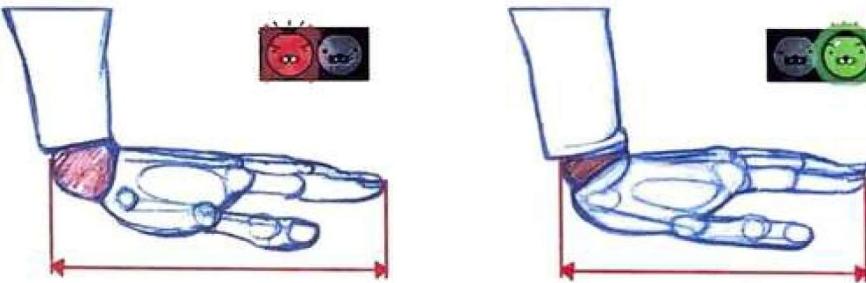
I sometimes omit the nails because it seems to add something more to the complex shape. However,

it's good to draw the fingernails, as they give the direction of the fingers and make the hand more believable!



### The shape of the old note wrist joint

The wrist joint that connects the arm and hand is drawn in the form of an oval cut in half. If you think of the shape of the joint as a round sphere, as shown in the picture of the wrong answer, when you bend your wrist, your arm will ride up on the joint and your palm will get longer. When you lift your wrist, the back of your hand should be pressed like the picture in the answer.



### hand holding tool

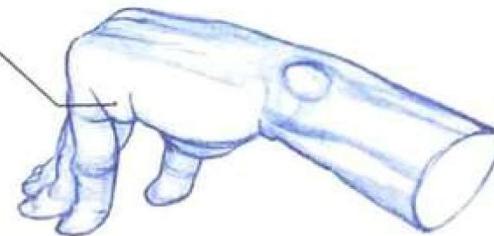
We do not hold the tool perpendicular to the wrist. It will be held at an angle as shown in the picture above. If you try to hold it vertically, you won't be able to hold the object tightly because of the thickness of the thumb. Express the shape of your hand when holding something like a knife, stick, gun, etc. obliquely like this.

■ Finger movement and direction



After drawing up to the figuration stage, I add the omitted hand bending bumps.

hand flexion



Please express the space between your fingers with a letter U, not a letter V.

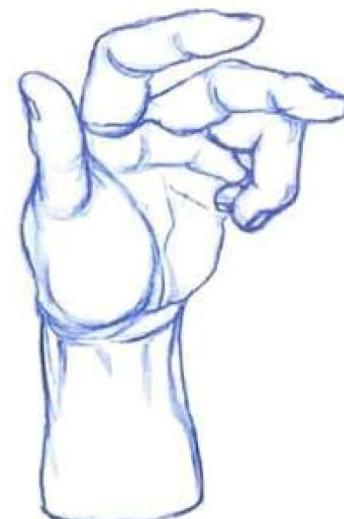
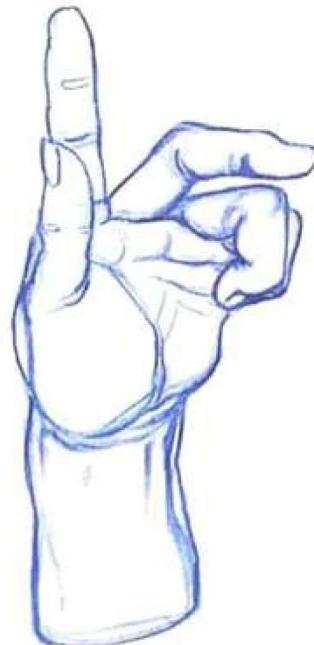
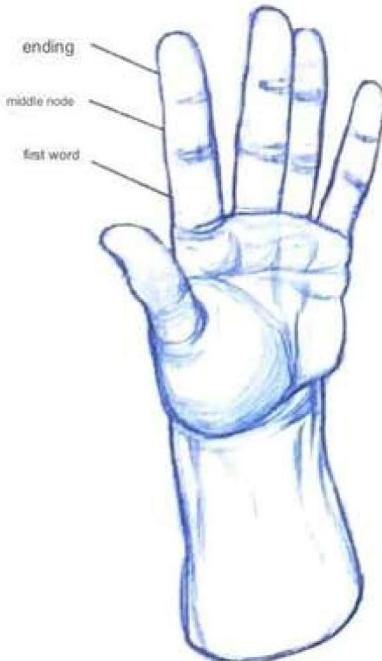


The skin film between the nodes is said to be a sign of deterioration of the webbing.

The order in which the fingers are bent

What is the point of natural motion when making a fist? Right away, the point is that the first word and the middle word are bent at the same time, not bending from the end of the finger. When drawing an action, you should think about the movement before and after it.

You can draw vivid pictures.



## weak hand shape

The index finger is straightened and gradually bends toward the little finger.



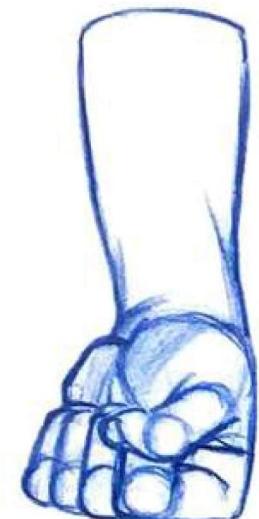
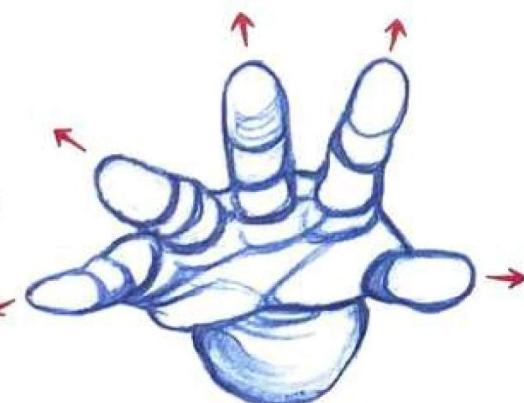
## fingers folded posture

When you close your hands, each finger will come together toward the center of your palm. Because all the fingers come together toward the center, when you make a fist, your fingers interlock and there is no gap. Each finger bends at a different angle, so bending your fingers is more difficult to draw than straightening them.



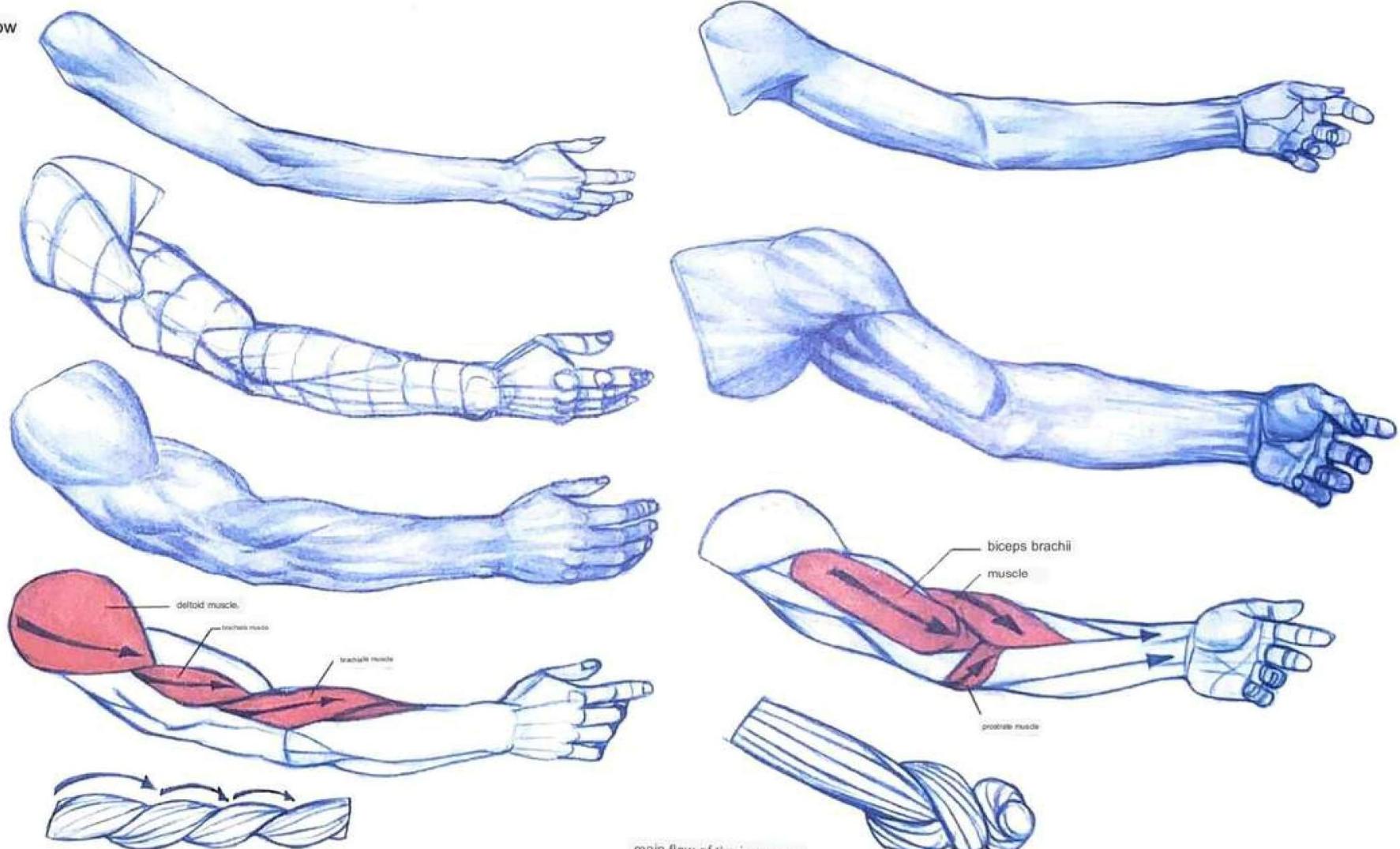
## finger posture

When you spread your fingers apart,  
your fingertips extend radially.



## 4 arm flow

### Pretzel Flow and Knot Flow

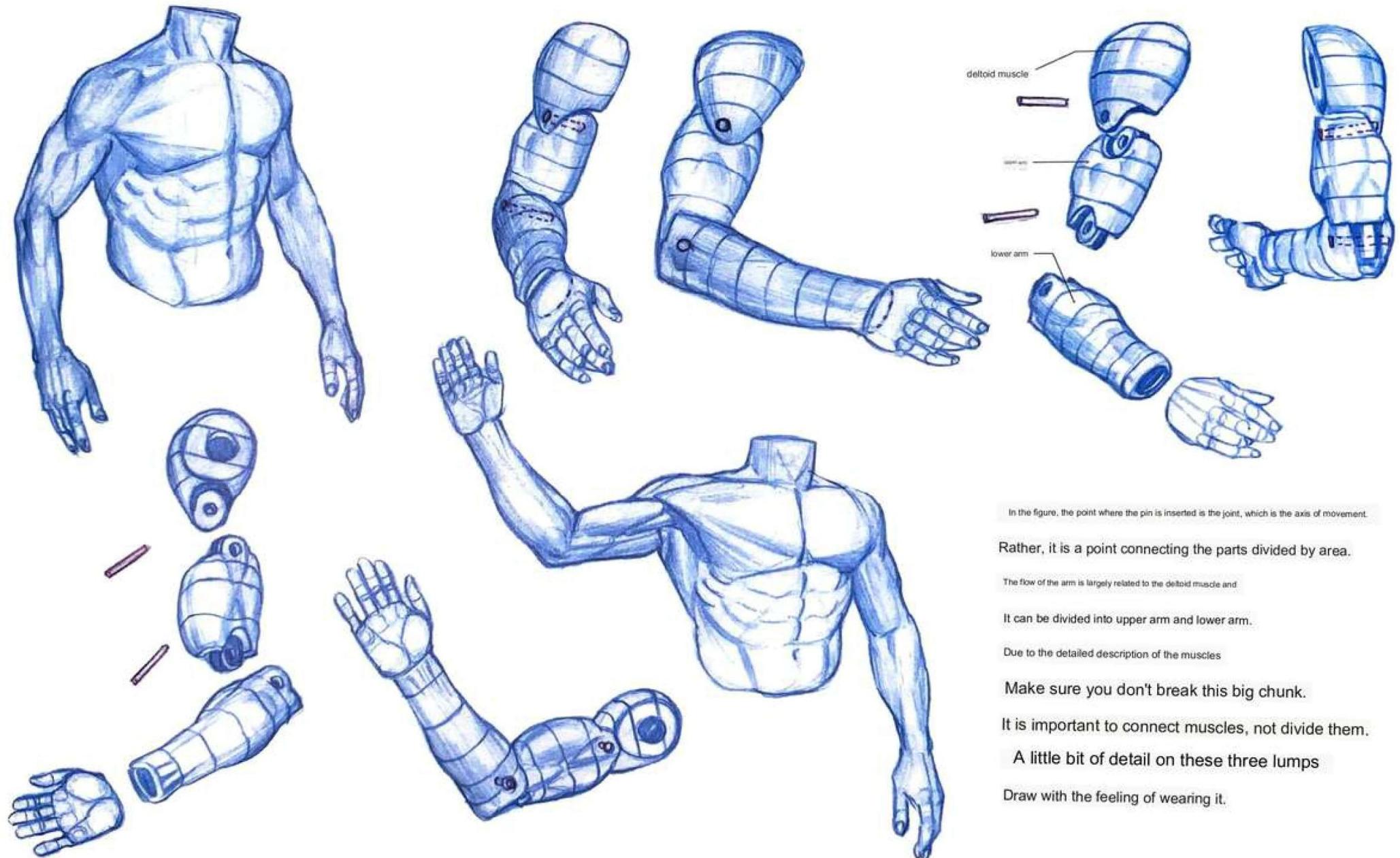


### Major flow of the outer arm

When looking at the arm from the outside, the deltoid, brachii, and brachii muscle have the shape of a rope twisted like a twist. If you add the remaining muscles around this flow, you can easily express the flow of the arm.

### main flow of the inner arm

Many people find it difficult to draw where the joints fold. In the case of the arm, it is easy to understand if you think of the shape of the biceps brachii muscle digging between the pronator muscle and the brachioradialis muscle like a rope knot.



In the figure, the point where the pin is inserted is the joint, which is the axis of movement.

Rather, it is a point connecting the parts divided by area.

The flow of the arm is largely related to the deltoid muscle and

It can be divided into upper arm and lower arm.

Due to the detailed description of the muscles

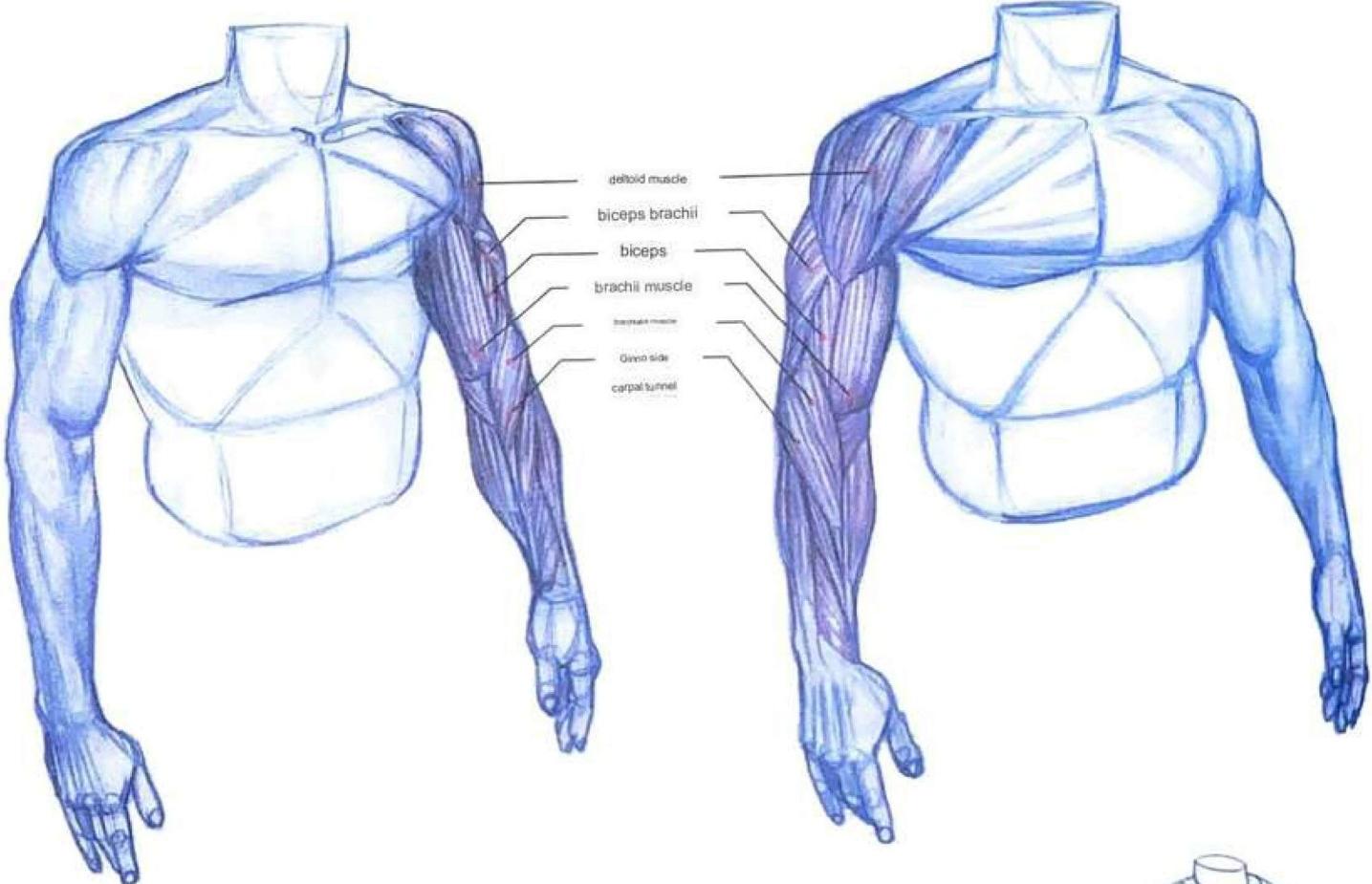
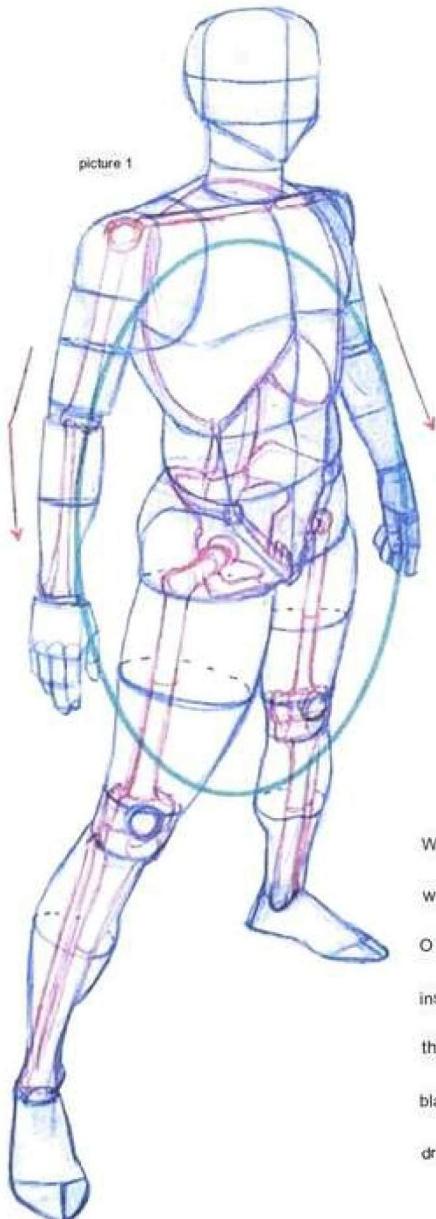
Make sure you don't break this big chunk.

It is important to connect muscles, not divide them.

A little bit of detail on these three lumps

Draw with the feeling of wearing it.

■ O-shaped flow of the male arm



When looking at the basic posture of a naturally standing human body from a 45-degree side, the flow of both arms should not be drawn with the same bend as shown in Figure 2. If you relax your arms and take a posture of attention, you will see an O shape where your arms are gently bent inward as shown in Figure 1. Because of this, the arm closest to the field of view is bent inside the body, and the arm on the other side appears as a straight line without bending. At this time, note that the direction of the hand is at an angle where one side can see the back of the hand and the other side can see the side blade. A natural and stable human body can be created only when these large flows are properly drawn and then the muscles are expressed.

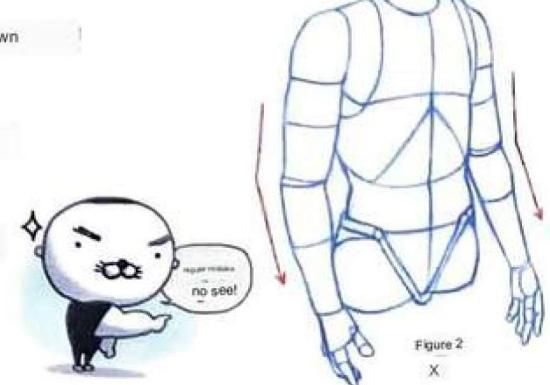
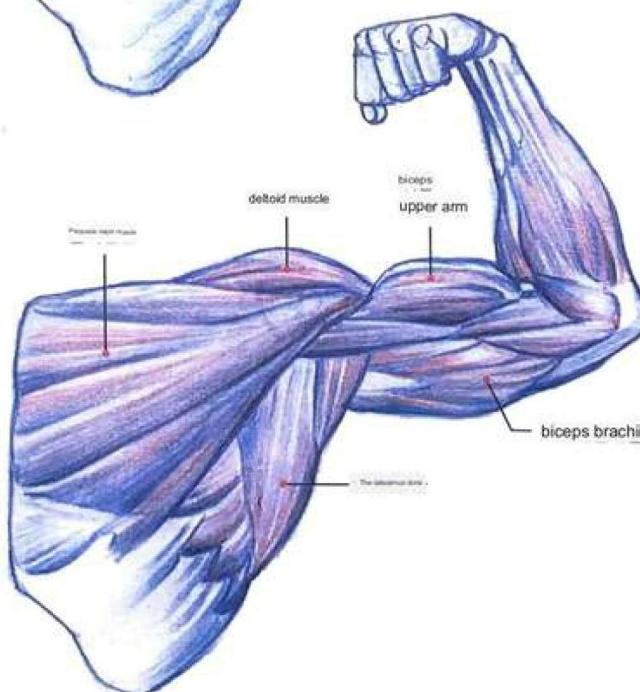
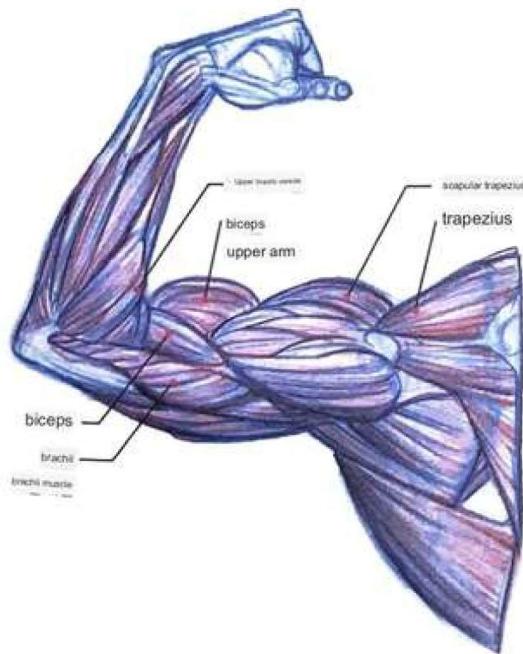
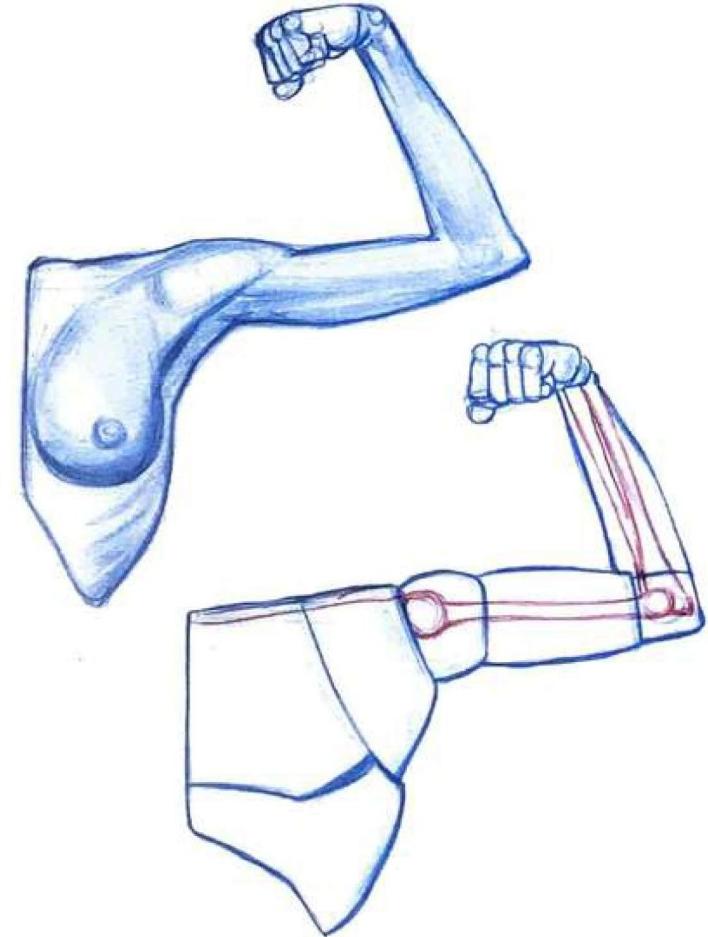
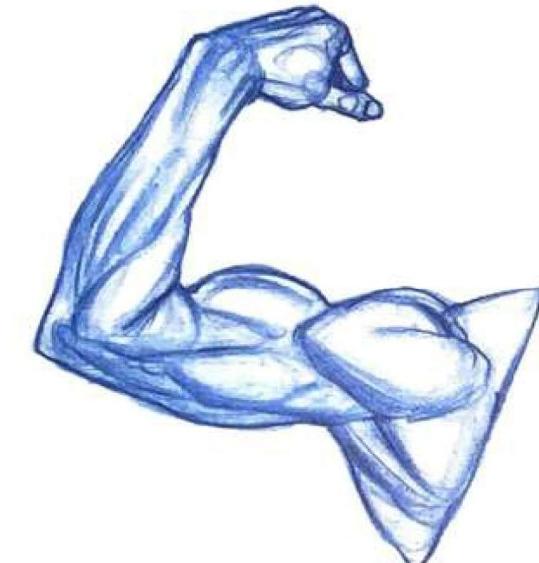


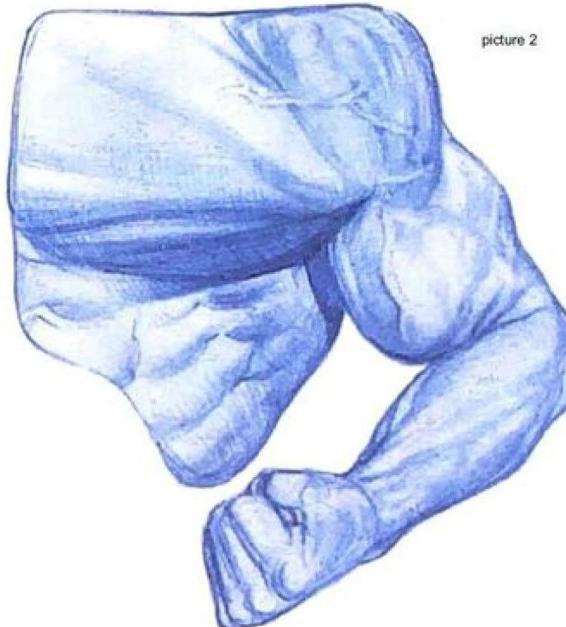
Figure 2  
X

■ Biceps brachii emphasis posture



This pose, typical of bodybuilders, accentuates all the muscles of the upper body.

From the front, the biceps brachii and the latissimus dorsi are emphasized, while from the back, the emphasis is on the deltoid, the biceps brachii, and the overall back muscles. When expressing this posture with a picture, it is difficult to locate the armpit area where many muscles are intertwined from the front, and the position of the deltoid muscle that has gone over to the back from the back. In any posture, it is more important to draw a large silhouette than to describe detailed muscles, so try to find the flow in simplified shapes for complex structures.



■ Variation of flow according to the direction of the hand

Looking at the picture on the left, you can see a lot of changes in the flow of the arm when the back of the hand is facing up and down when the arm is bent forward at 90 degrees. As shown in Figure 1, when the back of the hand faces the sky, the biceps brachii attached to the radius rotates together with the radius, twisting the muscle and making it impossible to apply force. On the other hand, as shown in Figure 2, when the palm faces the sky, the radius rotates in the opposite direction, and the twisted biceps brachii muscle of the radius is released, creating a state in which force can be applied. In the direction of the hand in Figure 1, you cannot apply force to the arm as in the posture in Figure 2, so the angular flow that occurs when the muscle contracts is not created. Like this, the muscles follow the direction of the hand, so the flow of the arm changes.

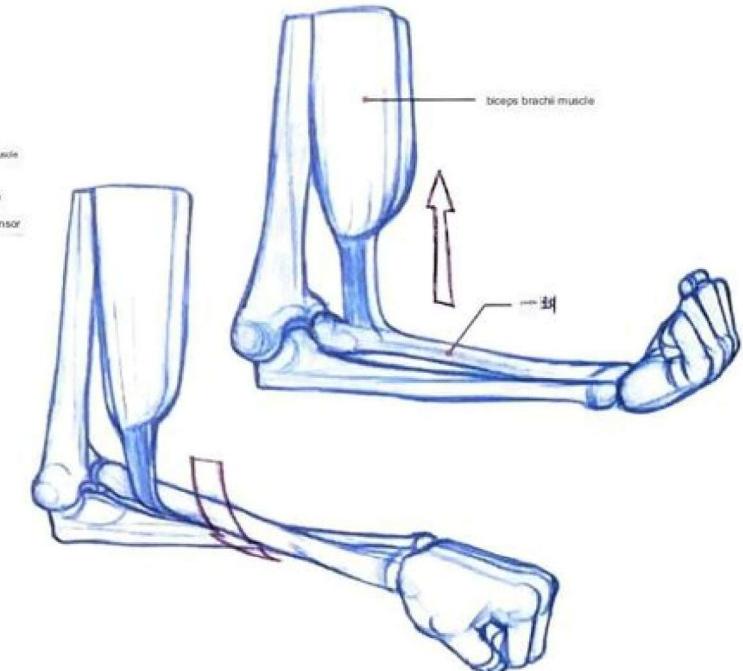
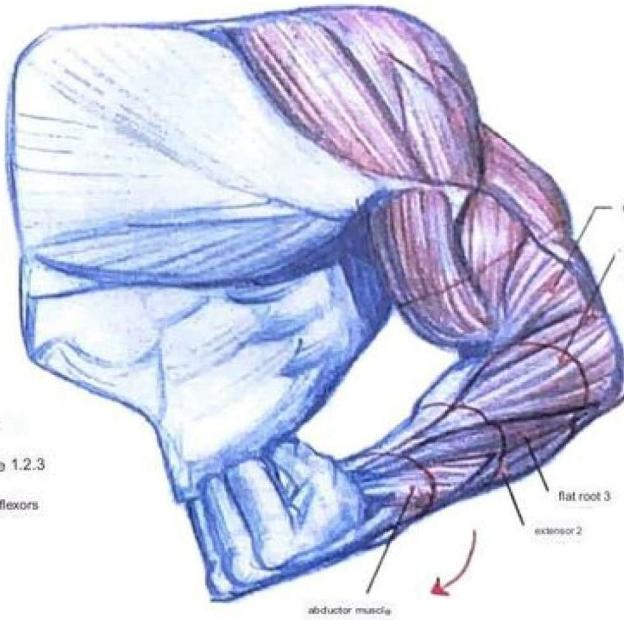
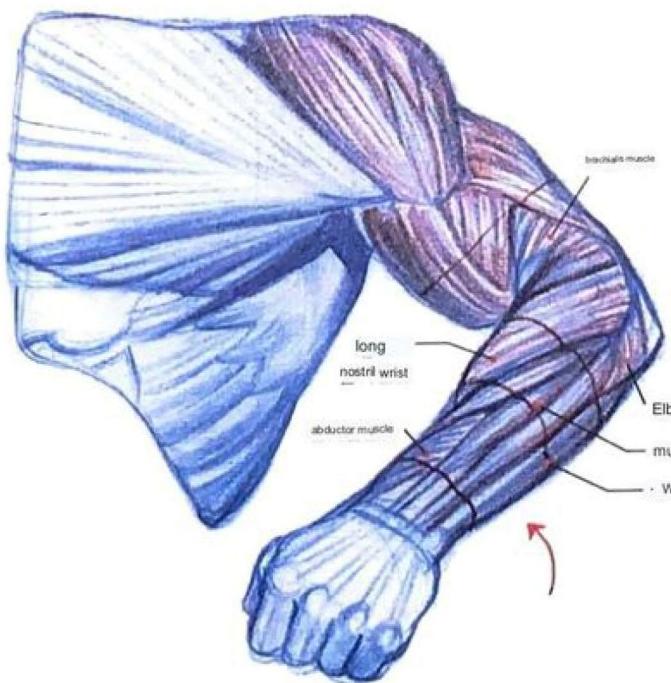


Figure 3

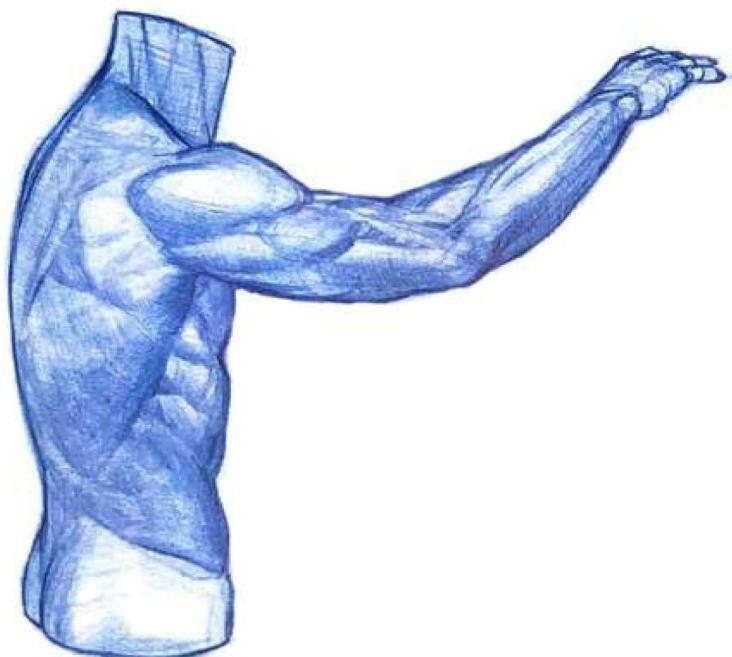
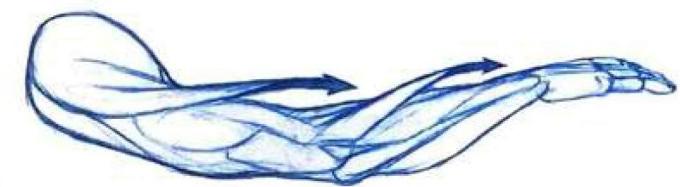


Figure 4



■ Twist and release of arm muscles

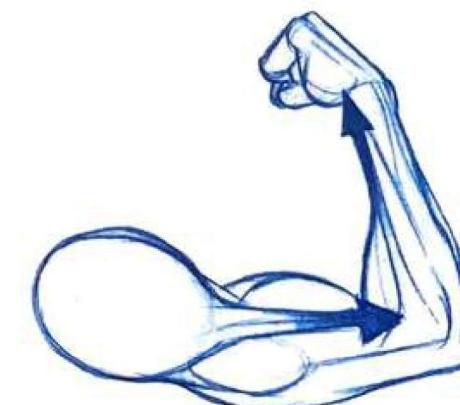
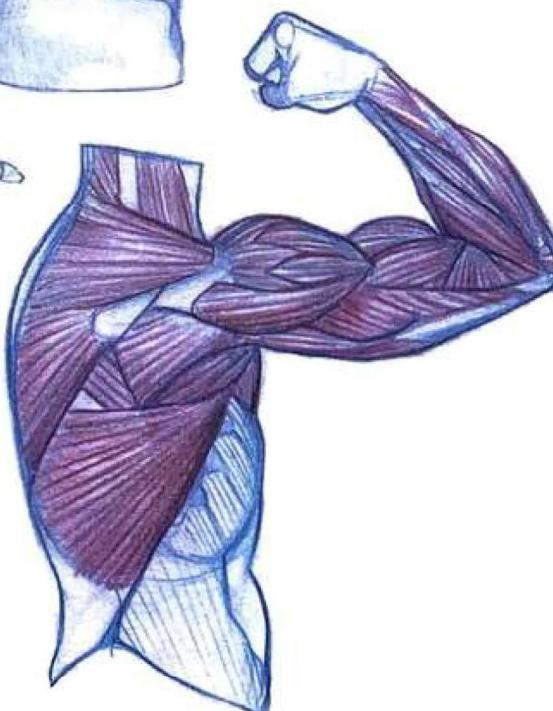
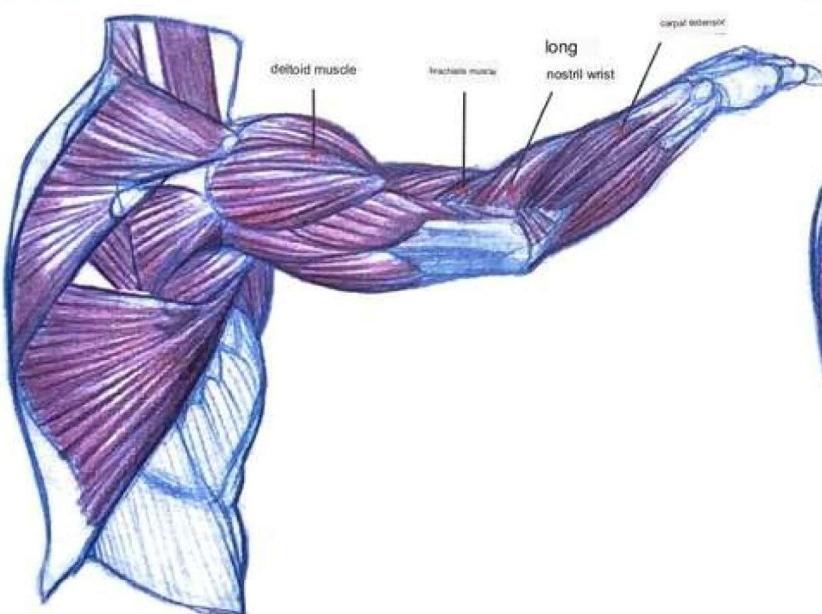
The twist of the arm muscle through Figures 3 and

Shall we observe the loosening?

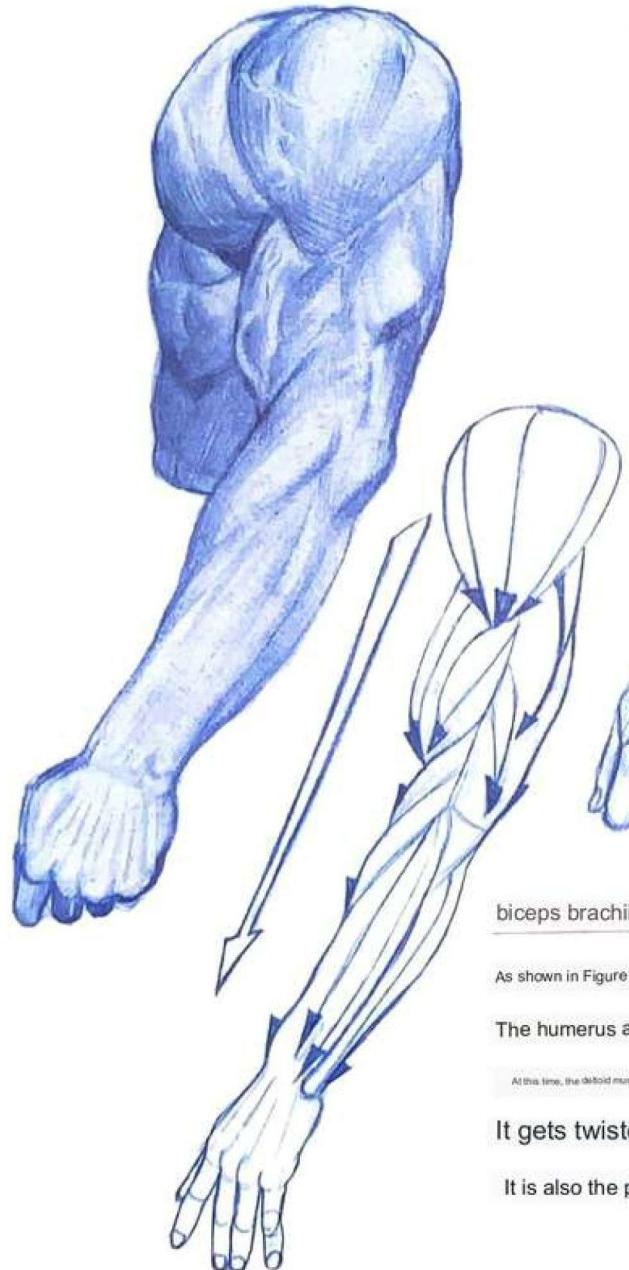
4 and the flow of the arm muscle in Figure 3 are twisted. The arm rotates from the humerus to the inside of the body so that the deltoid muscles look up. In addition, as the back of the hand faces upward and the radius is overturned,

the brachiocephalic muscle, long radial carpal extensor muscle, and carpal extensor muscle are twisted

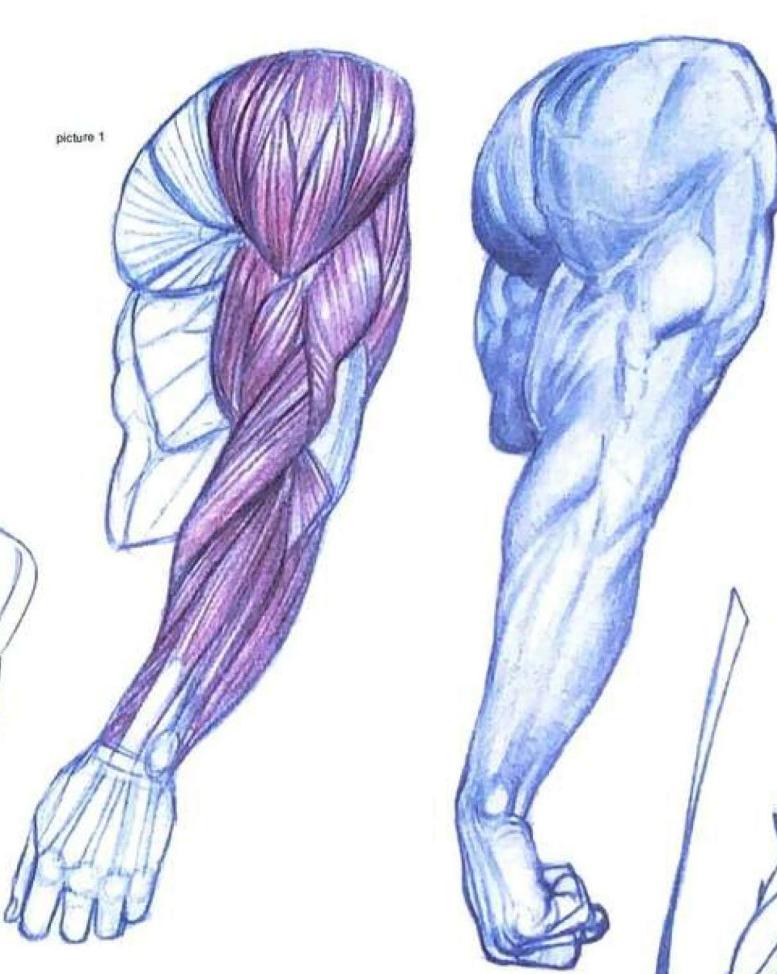
toward the wrist. Conversely, if you take the posture shown in Figure 4, all the muscles mentioned above will be released from the twisted state, creating a straight flow.



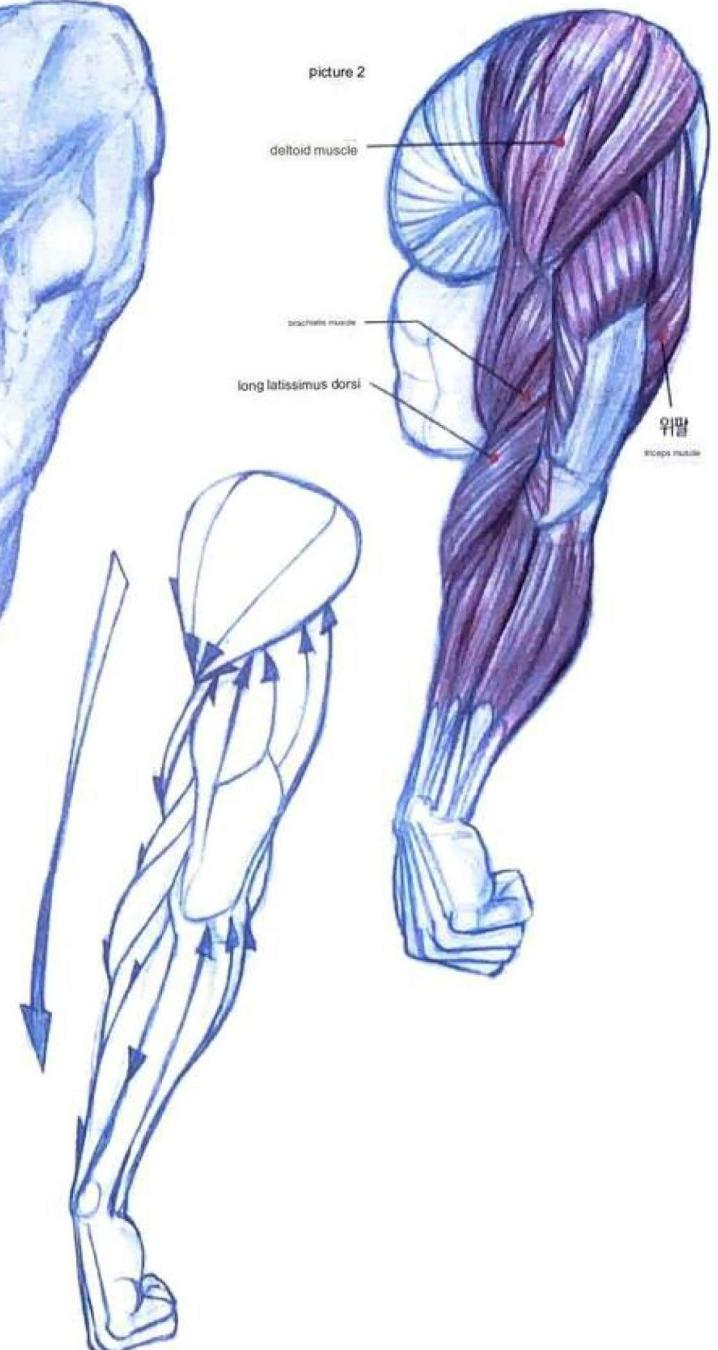
■ Biceps triceps emphasis posture



picture 1



picture 2



biceps brachii

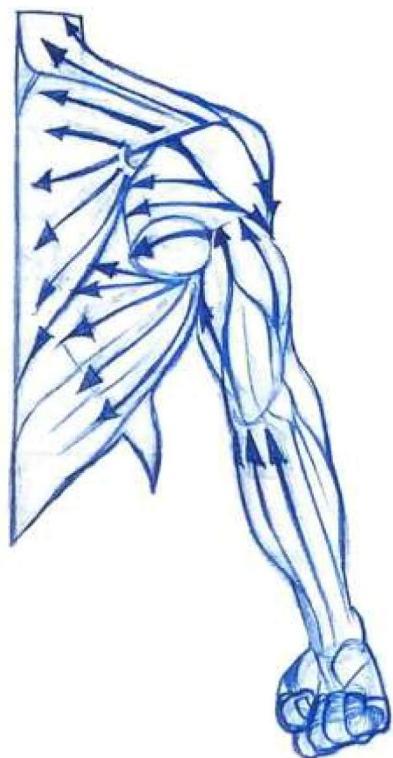
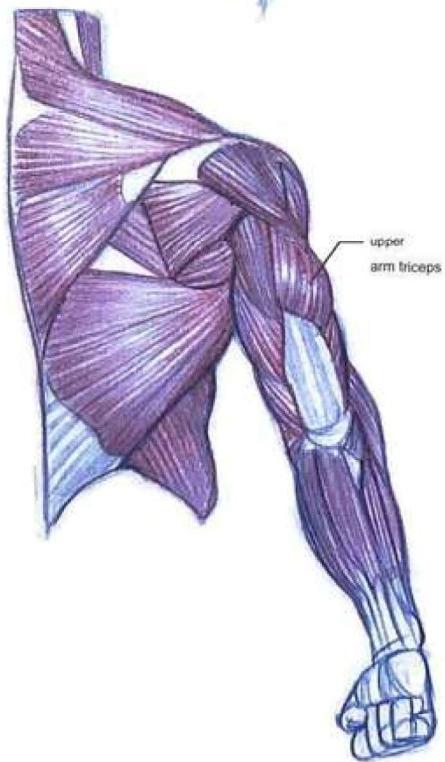
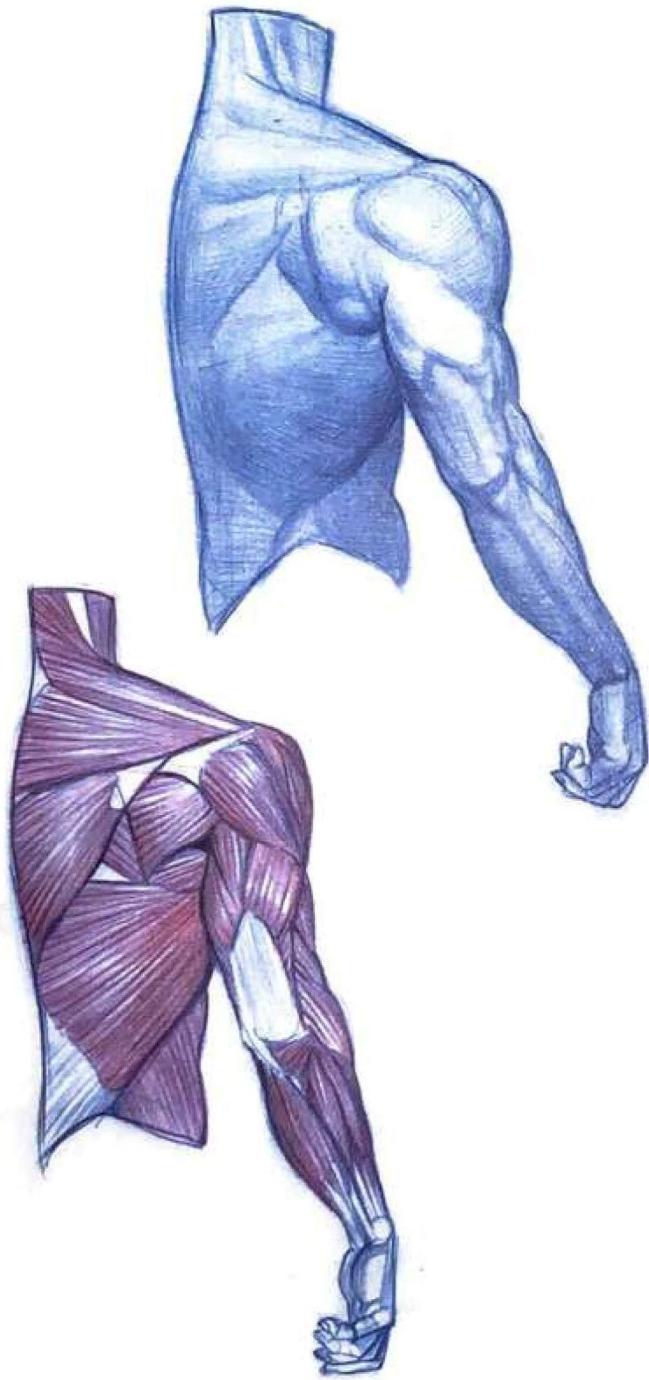
As shown in Figure 2, when the maximum force is applied to the triceps brachii

The humerus and radius rotate inside the body.

At this time, the deltoid muscle, the brachioradialis muscle, and the long latissimus carpal extensor muscle

It gets twisted. Bodybuilders maximally contracted

It is also the posture taken to show the condition of the triceps muscle.



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natural relaxation and contraction

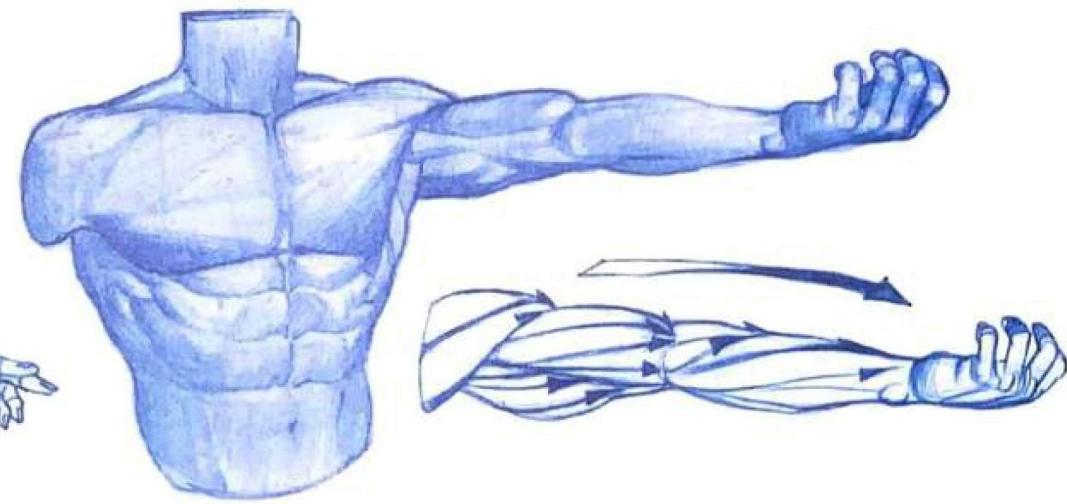
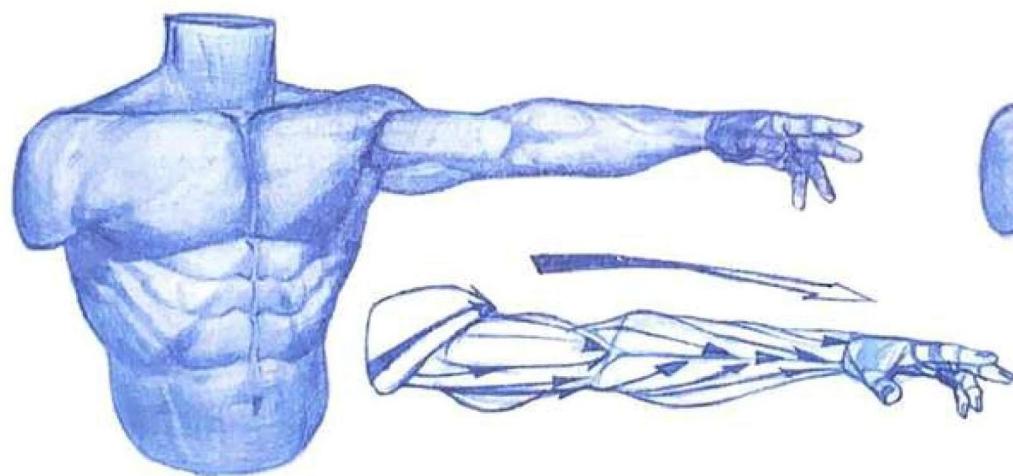
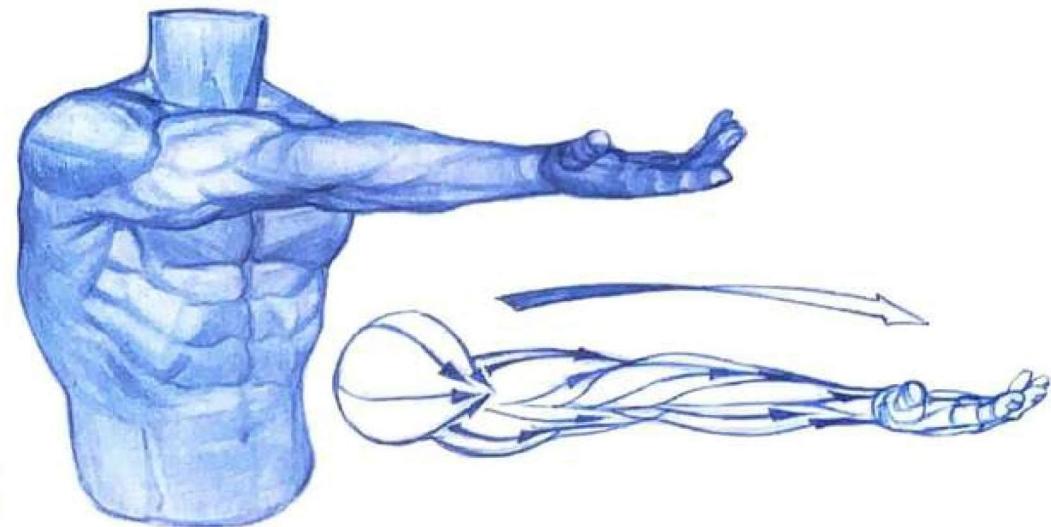
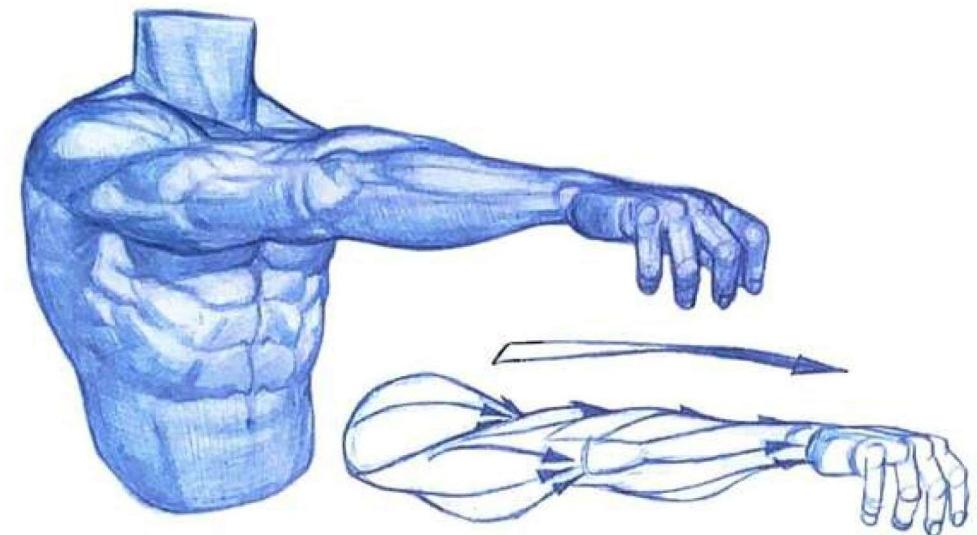
These figures are full back views of the poses taken on the left page.

When you apply force to the triceps brachii, only the muscles in that area

Instead of contracting, all the muscles around it also contract.

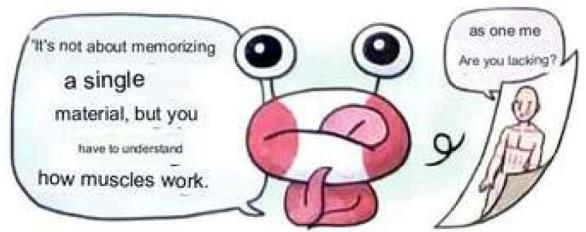
You can intentionally apply force to only one muscle, but if you apply force unintentionally and naturally, the force goes into the surrounding muscles. If you draw with these circumstances in mind, a more natural flow of movement will emerge.

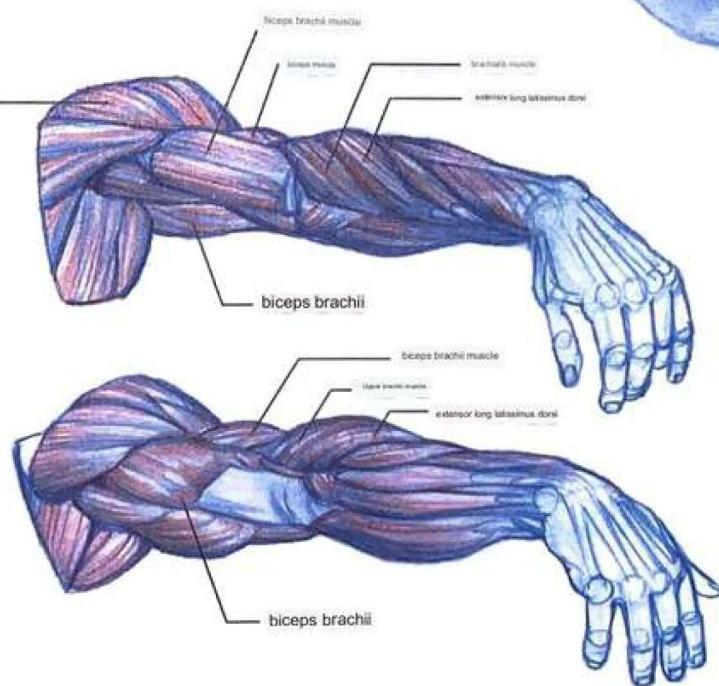
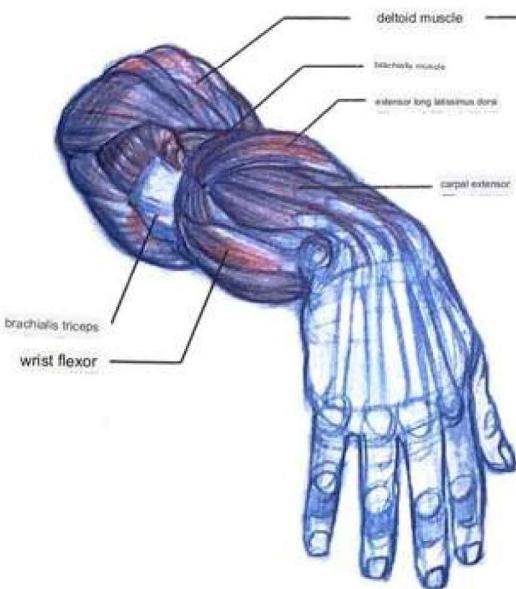
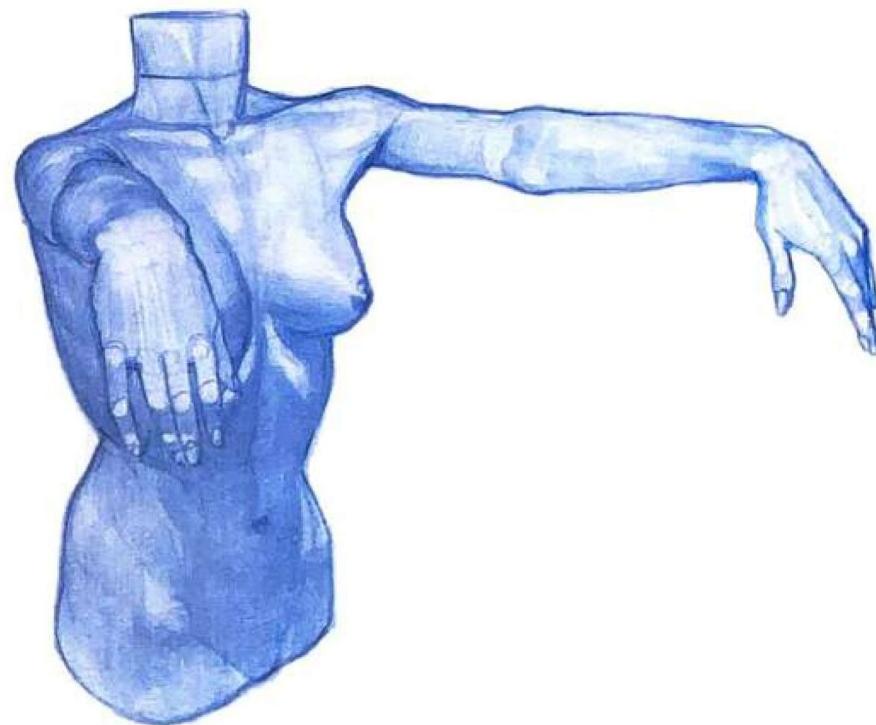
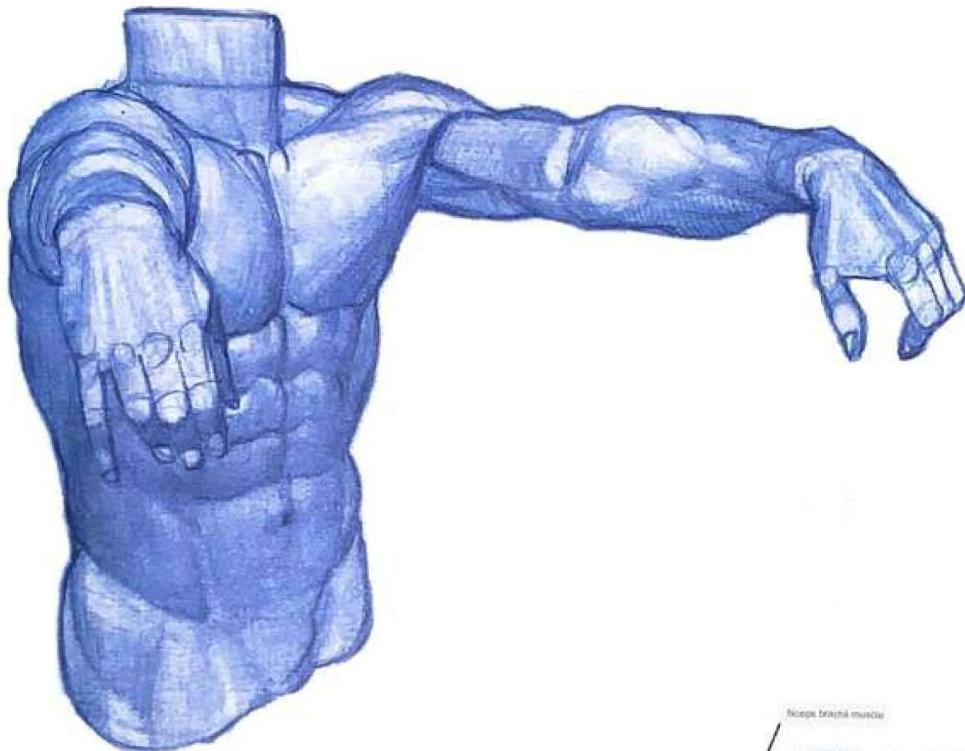
You need to be able to express the difference in form that occurs depending on the state of muscle relaxation or contraction.



• Upside-down and back-up of the arm

In the picture above, you can see that the overall outline of the arm changes as the humerus head and radius rotate as the hand flips over. When the bone rotates, the muscle also rotates, changing the external flow. Since the flow of the arm is determined by the direction of the hand, draw the arm after holding the movement of the hand first. The reason why muscles are difficult is because the direction of the muscles also changes depending on the movement.

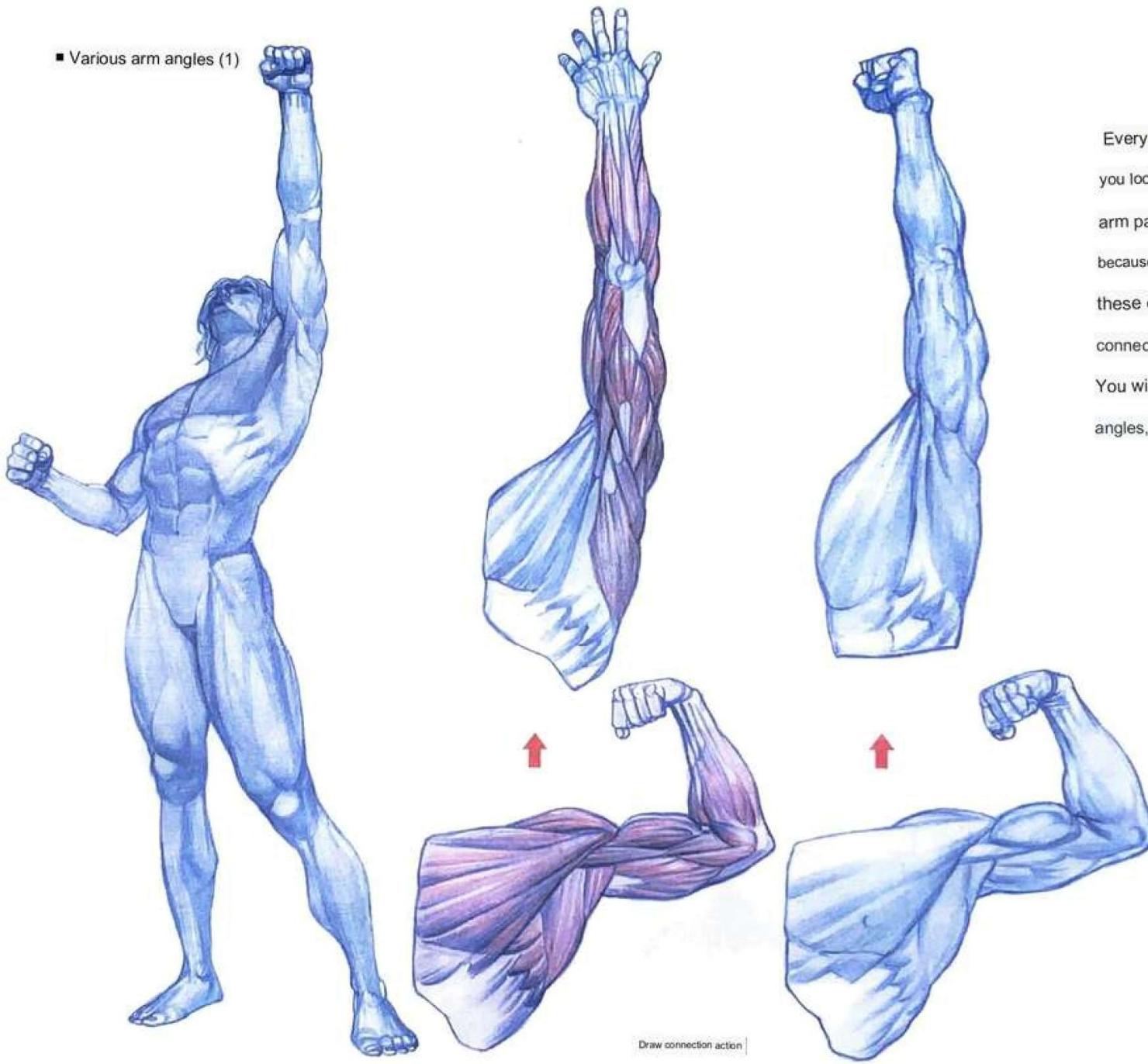




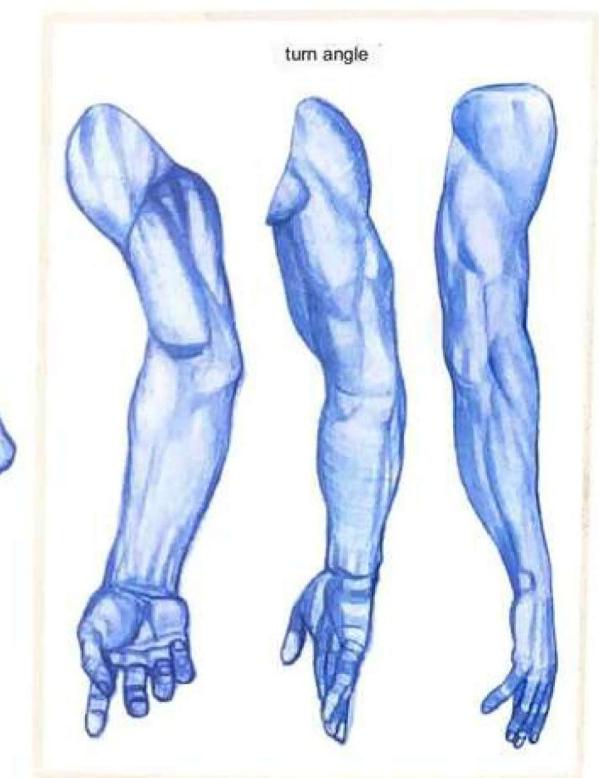
#### ■ shortened arm flow

Among the whole body, especially the hands, many branches of muscles and joints are concentrated, for precise and complex work. Several muscles that move the fingers are connected to the arm, so the entire arm is complicated. Since the splits of the multi-branched arm muscles stand out from the outside compared to other parts, knowledge of the anatomy of the arm is essential to realistically draw the arm. In particular, more information is needed to draw an arm at an angle to the front, as shown above, than to the side. First of all, you need to know the correct perspective and the order in which the muscles overlap, and you need to be able to combine the thickness of the muscles in a three-dimensional way so that you can draw a shortened arm.

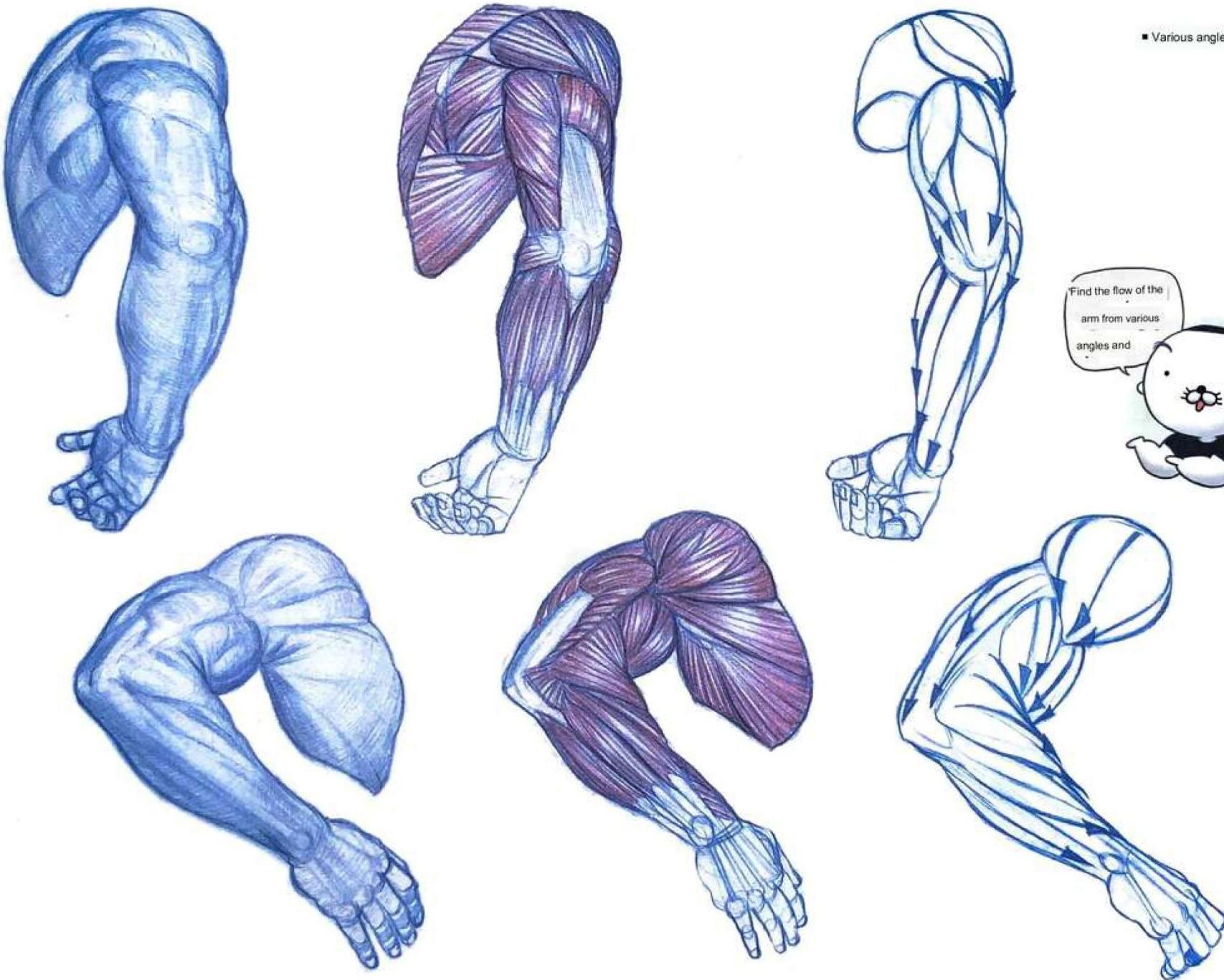
■ Various arm angles (1)



Every part of the body has an angle that feels unfamiliar. If you look at the full body character here, don't you find the raised arm part more difficult than the other parts? It's probably because it's an area that's rarely observed in everyday life. To overcome these difficulties, it is recommended to practice 'drawing a connecting motion' and 'rotating an angle' like the picture in the box. You will be able to draw people from more diverse angles, breaking away from the usual angles or movements.



## ■ Various angles of the arm (2)



'Find the flow of the arm from various angles and'



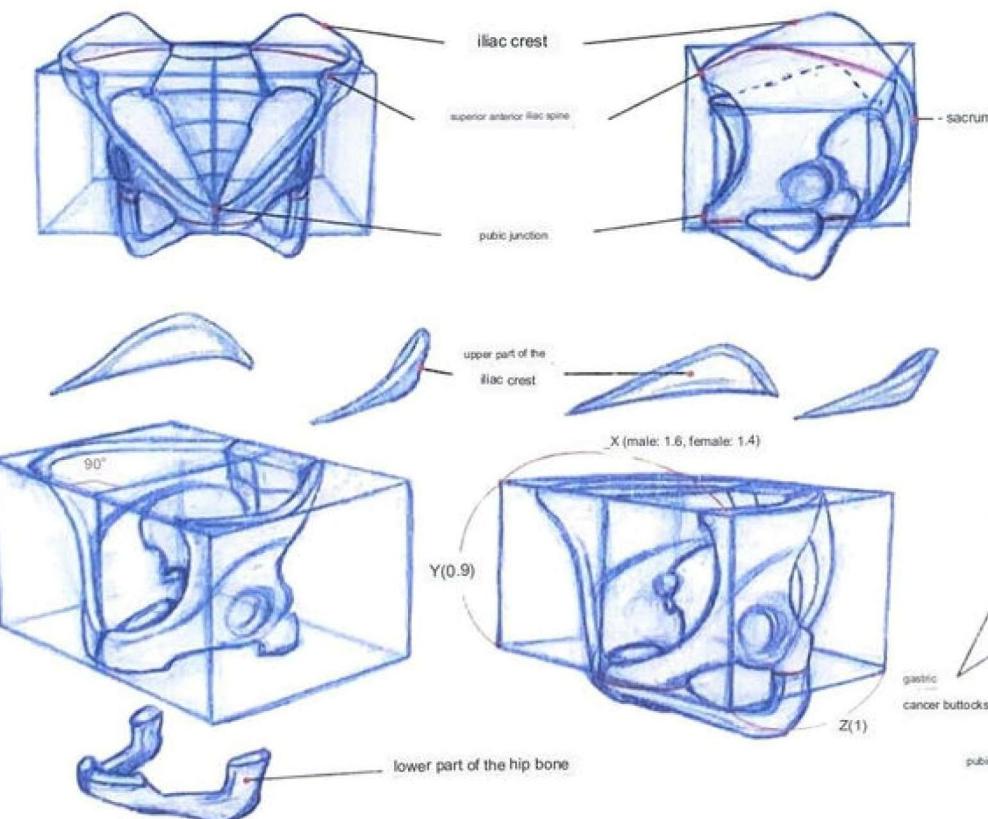
Observe how the anatomy information actually looks on the outside.

## |5 Leg muscles location and use

### ■ Pelvis in the box

#### important parts of the pelvic bone

Let's learn about the notorious pelvic bone, which is the most complex form of the human skeleton. As you learned in 'Chapter 1 Figures of the Human Body', the more complicated the shape is, the easier it is to understand the structure by simplifying it into a figure. Among the pelvic bones, the part that reveals the shape is the most important. The iliac crest, the superior anterior iliac spine, the pubic symphysis, and the sacral bone are in contact with the skin and affect the external shape. If you understand the location and shape of these four parts properly, you don't need to know so much about the rest of the pelvis.



**Pelvis as seen by intuition**

incorrect answer note

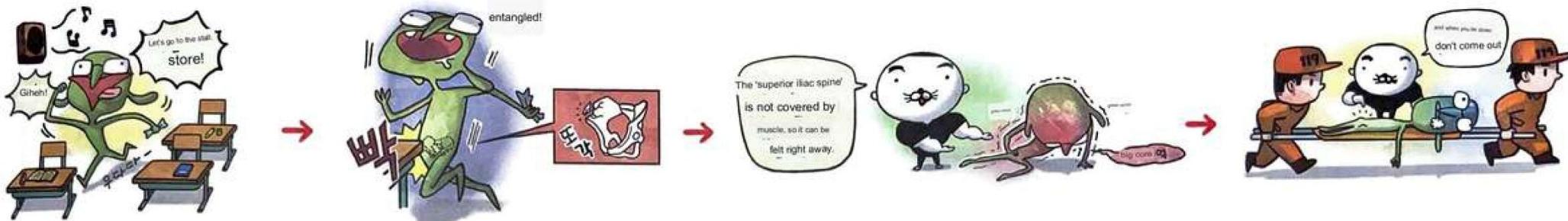
Let's look at the shape of the iliac crest first. Observe the position of the upper anterior iliac spine, the position of the sacral bone, and the flow of the iliac crest when looking down with a direct feeling. If you put the pelvis as seen by intuition into a rectangle of just the right size, the hip bone ridge will touch the point on the side of the box, and the sacrum will touch the point on the back of the box, as shown in the answer picture. Note that the superior anterior iliac spine does not touch the apex. Let's understand the flow of the ridge by comparing examples of correct and incorrect answers.

#### Drawing the pelvis based on the cube

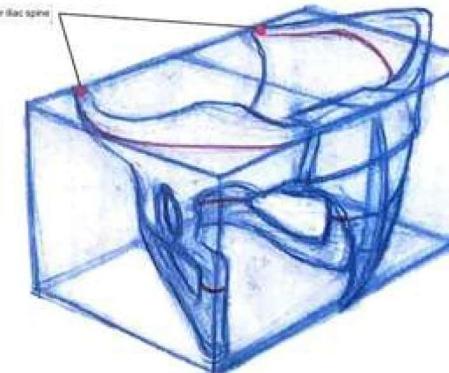
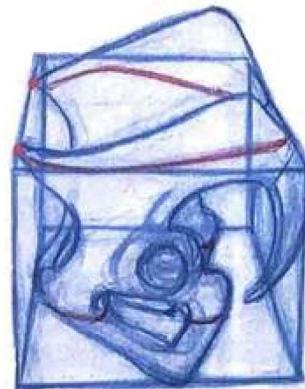
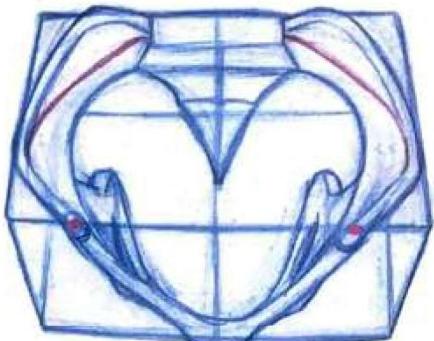
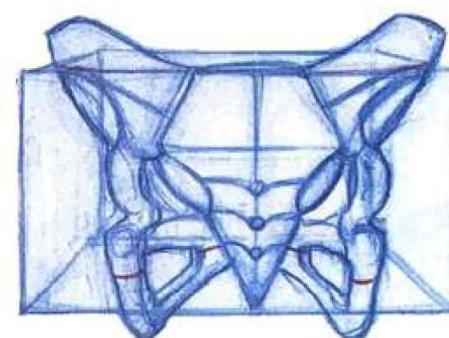
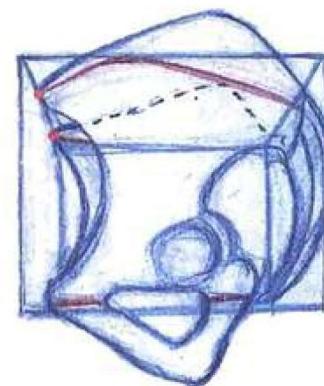
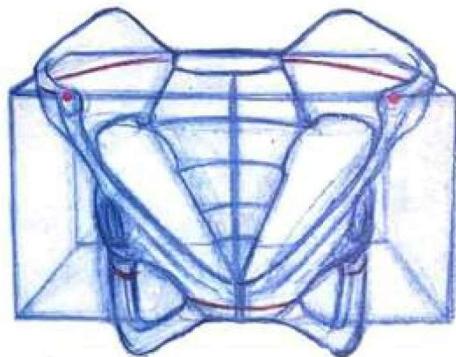
The length of Y: the height of the superior anterior iliac spine and the pubic symphysis. The length of X: the length at which the iliac wings touch both corners.

As shown in the picture on the left, after drawing a box with the lengths of X, Y, and Z excluding the upper part of the hip wing and the lower part of the hip bone branch, draw the shape of the pelvis inside the box and combine the upper part of the hip bone wing and the lower part of the hip bone branch. Complete the pelvis. It looks complicated, but as I said before, the shape of the pelvis in contact with the skin is the most important, so simplify and connect the rest of the complicated parts.

The most prominent anterior iliac spine of the pelvic bone



Human anatomy



### Pelvis at various angles

the aforementioned points

A box proportional to the center

Try drawing from multiple angles.

Once you are able to draw a hexahedron in proportion, let's practice drawing the pelvis centered on the point where the pelvis touches the skin

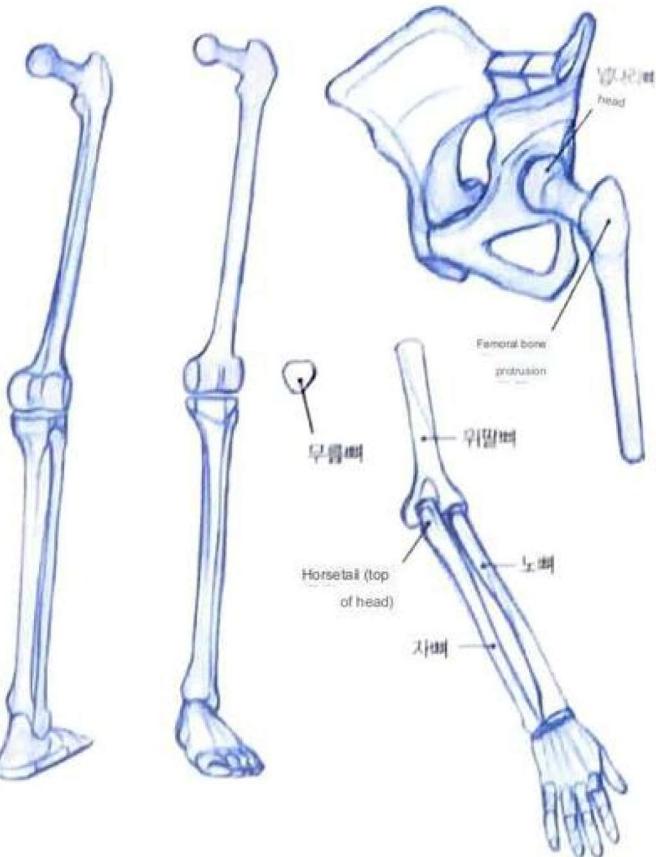
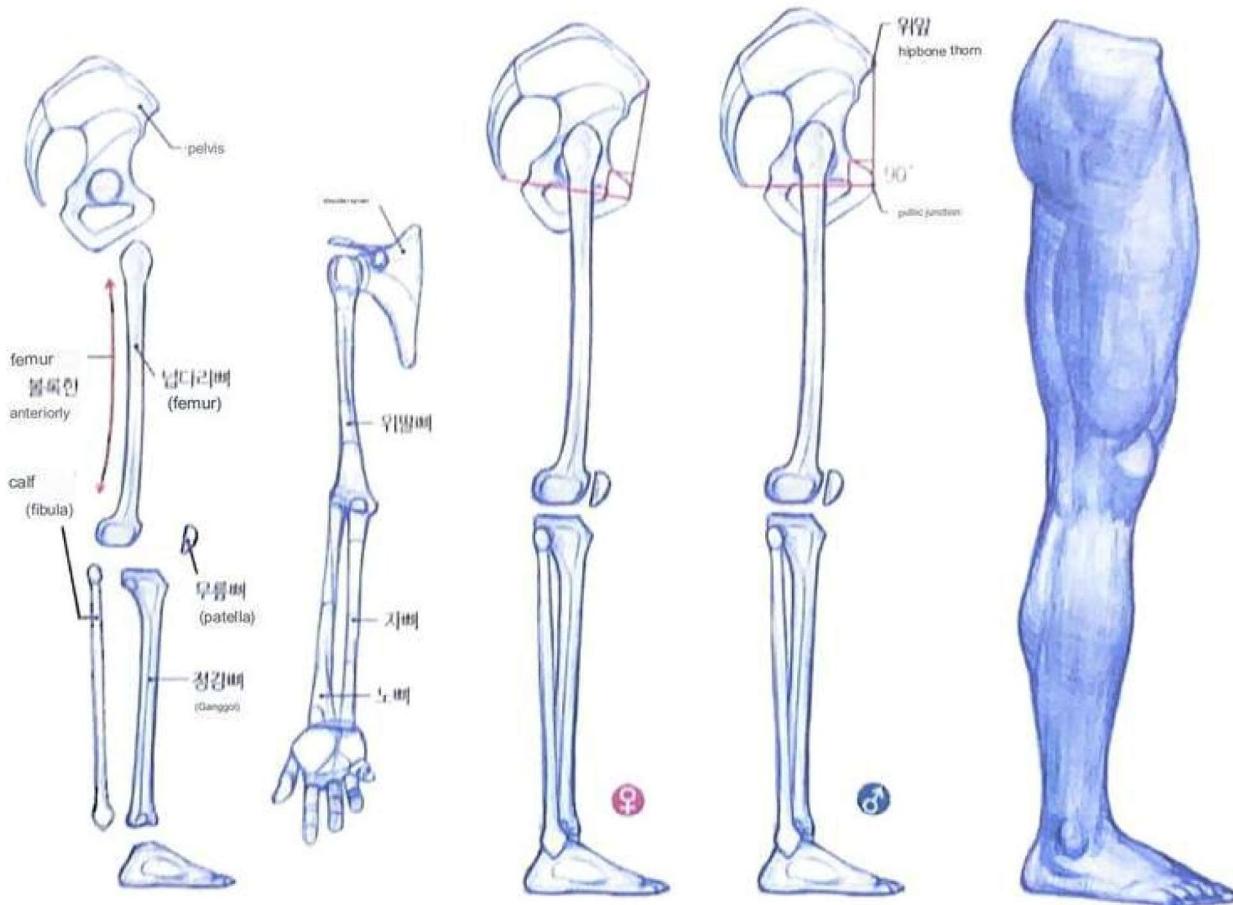
inside the hexahedron.



- Types of leg bones that compose the lower body

### Characteristics of the leg bones (tibia and fibula)

It is divided into the pelvis, femur, kneecap, shinbone, and calf bone. When viewed from the perfect side, in men, the tilt of the superior iliac spine and the pubic symphysis is perpendicular to the floor, and in women, the pelvis has an inclination of the superior anterior iliac spine protruding forward. Men's hips are longer than women's. Also, the femur seen from the side is characterized by a slightly convex anterior rather than a straight line. The calf area is divided into two parts, the shinbone and the calf, just as the forearm is divided into the ulna and the radius. As for the arms, the wrist rotates as the bodice turns over and over, but the ankle has evolved into a sturdy structure to support the weight of the whole body, so it does not rotate as well as the wrist.



### Characteristics of the leg bones (2)

The femoral head is the joint where the femur and pelvis meet. The ball joint is the most flexible of all joints. The reason why the femoral major process protrudes like a hump is to allow the buttock muscles to attach. Originally used as a forepaw, the arms evolved from the legs, so it is very helpful to understand if you compare and study the arms and legs together. Arms and legs have a lot in common, but the kneecap is a bone that is unique to the leg. It is in the same position as the head of the elbow. This patella serves as a lever to move the heavy leg more easily.

- Spreading the legs tensor muscle of the femoris (tensor fascia femoris), gluteus medius (gluteus medius), gluteus maximus (gluteus maximus)

starting point and ending point

The hip muscles do the same thing as the shoulder muscles in the arm. Like the shoulder muscles, the hip muscles are also divided into three. The figure below (a) shows the femoral fascia tensor muscle located in the front of the hip, starting from the superior anterior iliac spine and ending in the greater femoral process area.

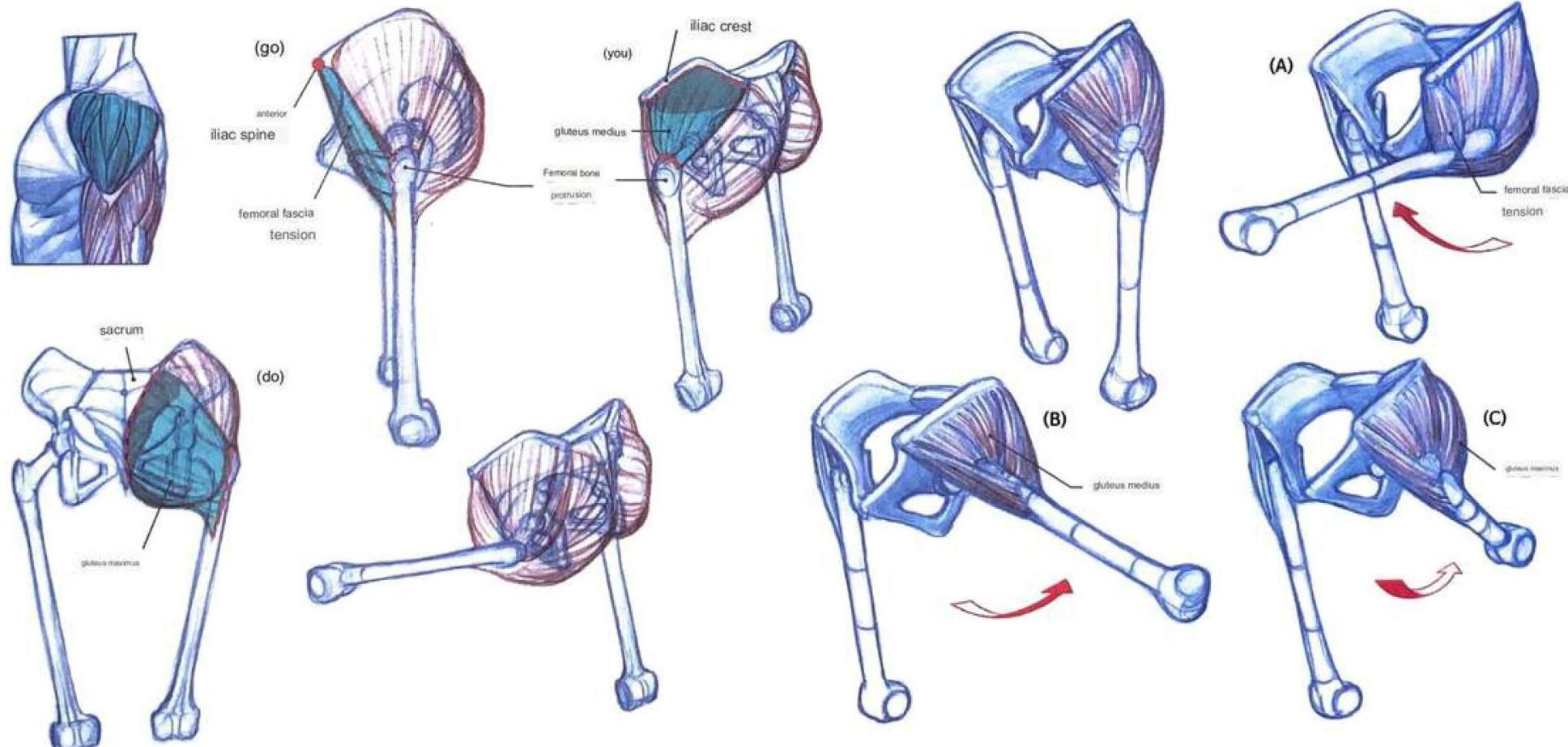
The gluteus medius muscle in the picture (b) faces the side of the hip, starting from the iliac wing area along the iliac crest and attaching to the greater process of the femur. Figure (c) is the gluteus maximus attached to the back of the hip, starting from the sacrum and attaching to the area behind the greater process of the femur.

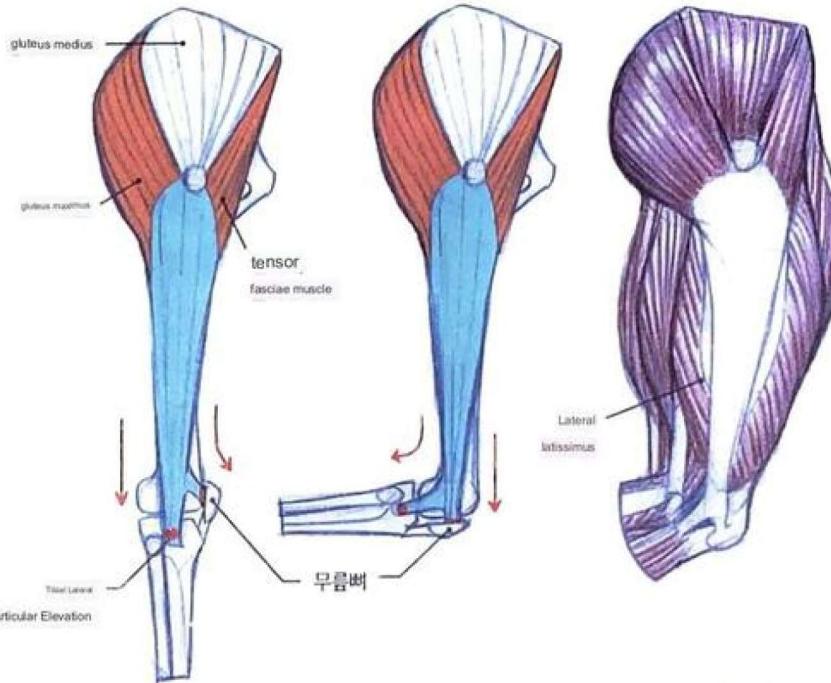
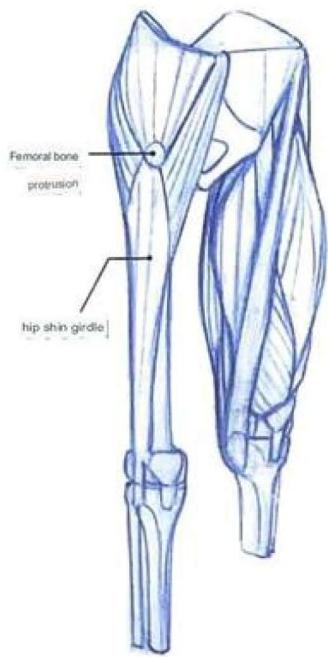
use

The hip muscles are responsible for moving the legs forward, backward, and sideways. When the femoral fascia tensor muscle in Figure (A) contracts, the femur moves forward. This muscle has a great influence on the flow expression connecting the pelvis and thighs. When the gluteus medius muscle in Figure (B) contracts, the femur bone rises to the side, and finally, when the gluteus maximus muscle contracts in Figure (C), the femur bone rises backward. The gluteus maximus is the largest of the three muscles because it lifts the body up or pushes it forward.

03

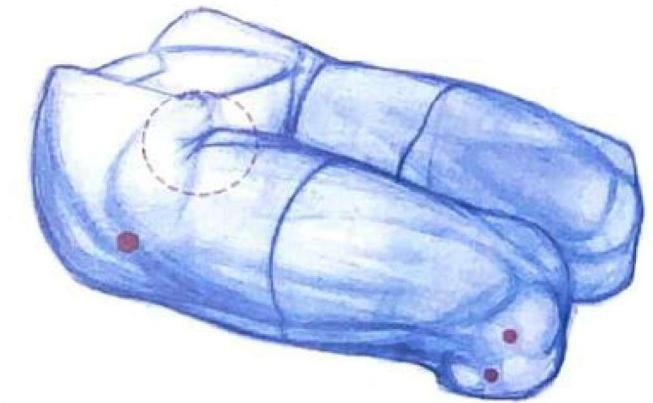
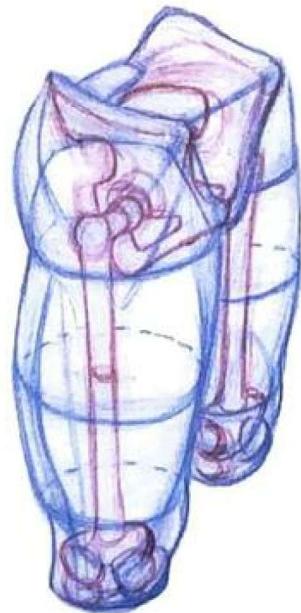
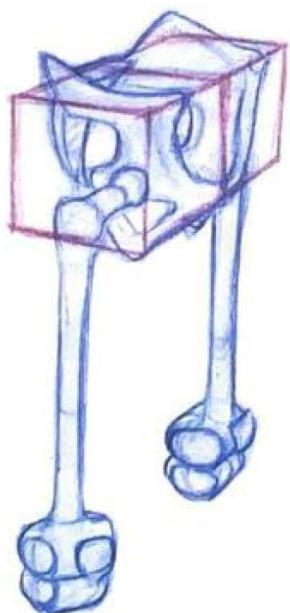
Human Anatomy





### hip shin girdle

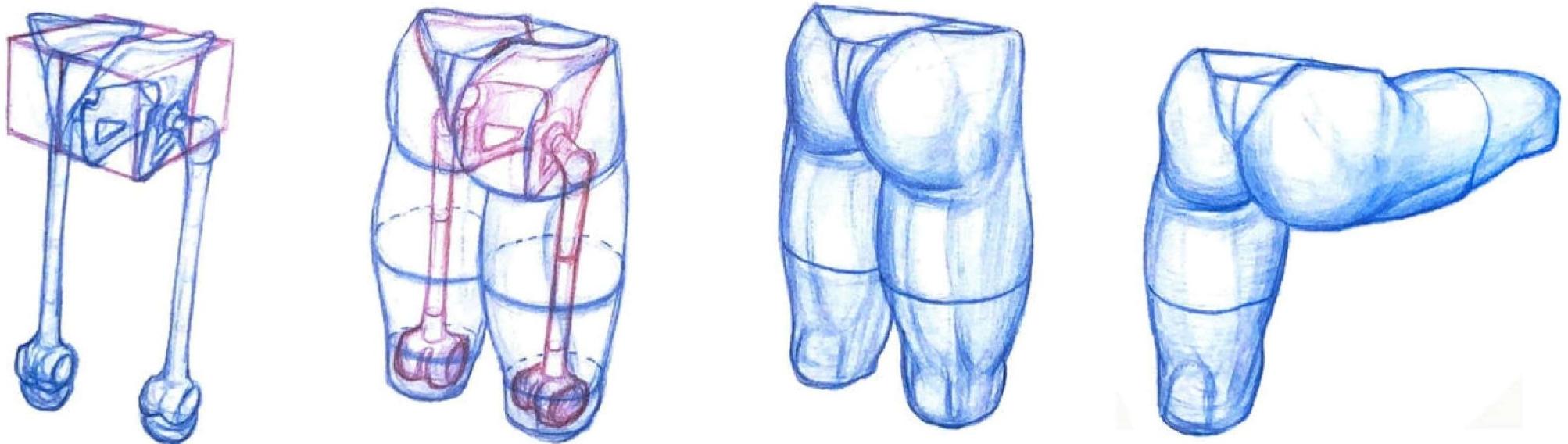
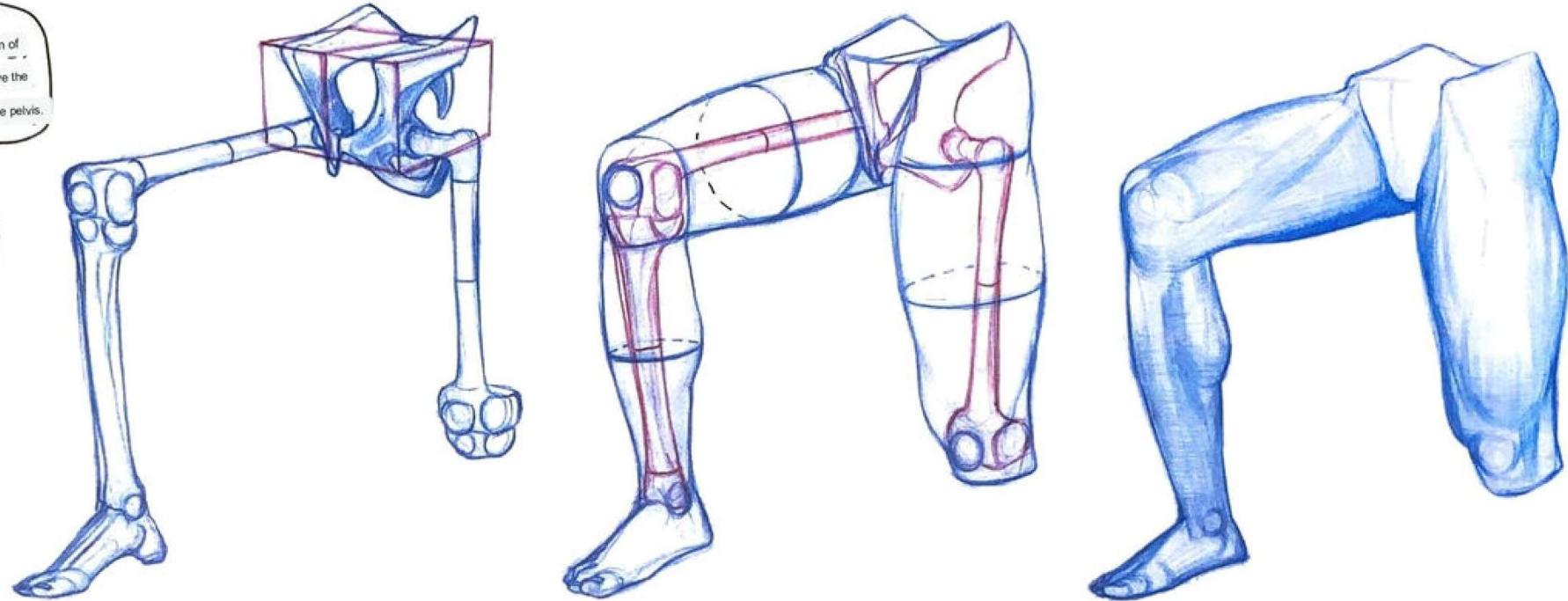
Previously, the gluteus maximus muscle and the femoral fascia tendon muscle were simplified and expressed as if they were attached to the femur bone, but in actual anatomy, these two muscles turned into a tendon called the iliac tibial band and descended long toward the patella and shinbone joint condyle. come and stick Between the hip shin girdle and the femur is a muscle called the latissimus dorsi. Observe the change through the picture on the left as the direction of the end point of the hip shin belt changes whenever the knee is bent or extended. This part is also visible outside the skin, so it is a depiction that cannot be missed. The gluteus medius muscle goes directly to the greater process of the femur and attaches directly to it. Since the muscle does not cover the femoral bone protrusion, it is a visible indicator because it is in close contact with the skin, and it is a part where the outline of the bone can be touched with the hand. Another characteristic is that men are more definitely touched than women.



### Thigh points exposed on the outside

The red dots in the figure indicate the endpoints of the greater femoral process and the iliac tibia. The circled dotted line shows the direction of the specific crease that crosses the muscle over the hamstring muscle when the leg is flexed.

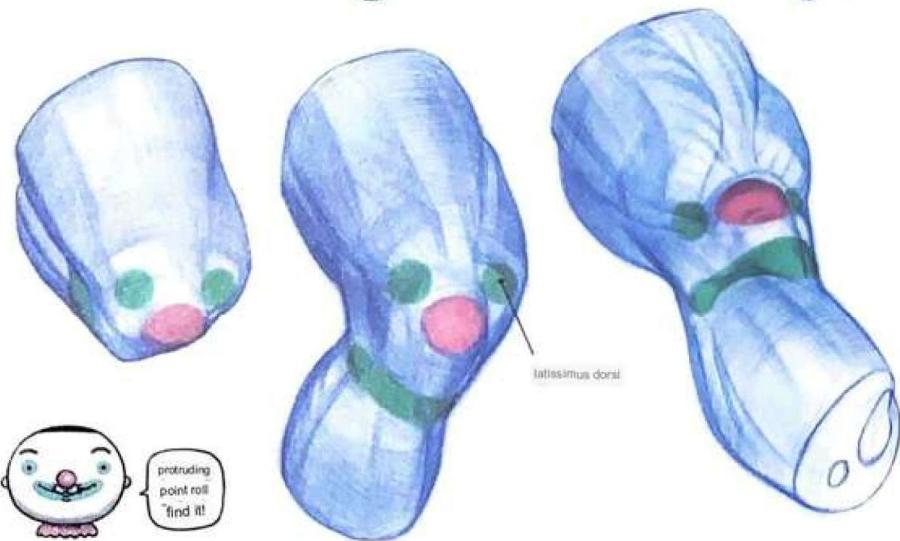
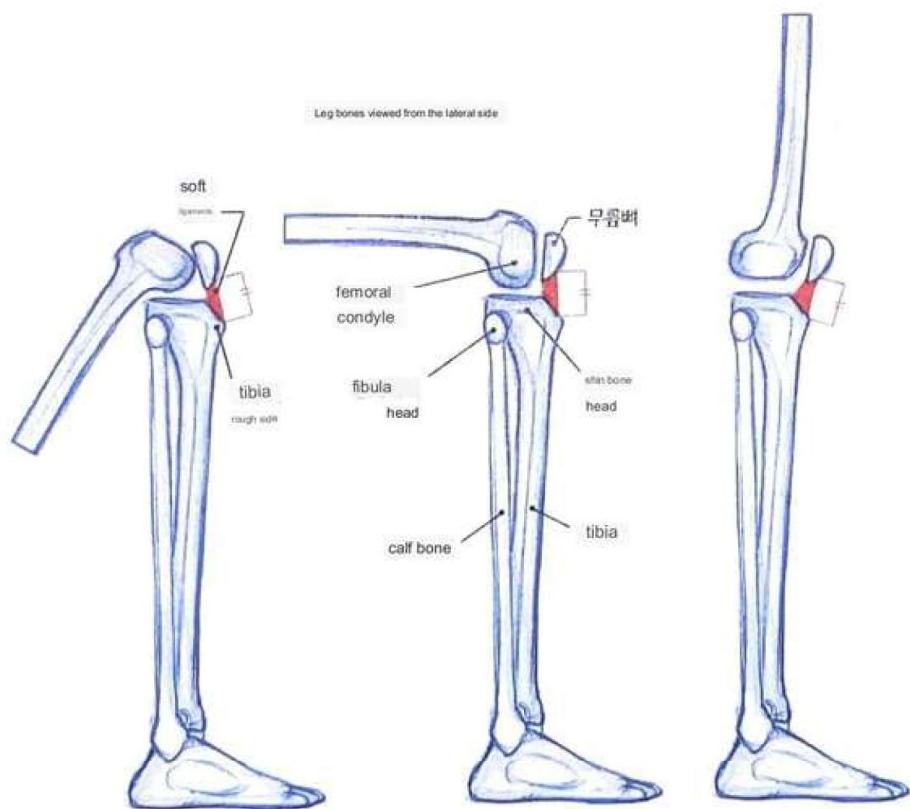
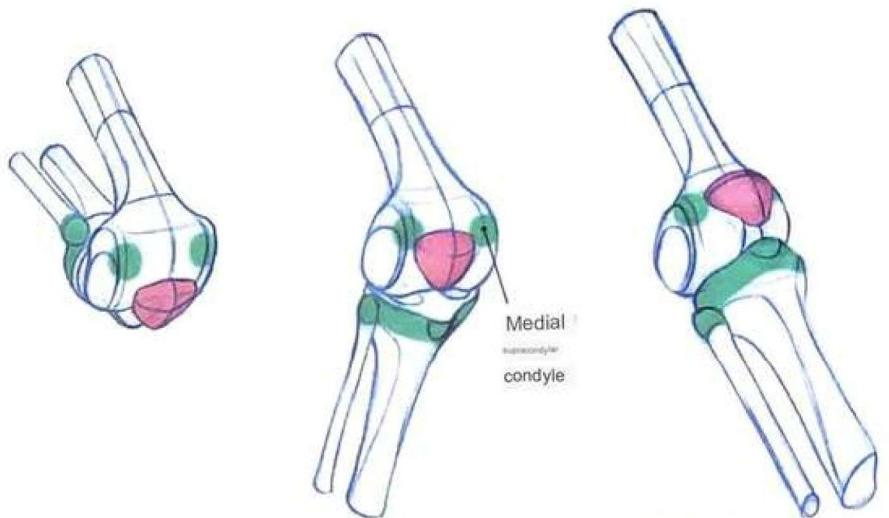
The sense of volume of the legs through the shape of the skeleton of the lower body and drawing. Let's observe the appearance of the muscles located in the pelvis.



■ Structure of the patella that changes with movement

The relationship between the patella and tibia

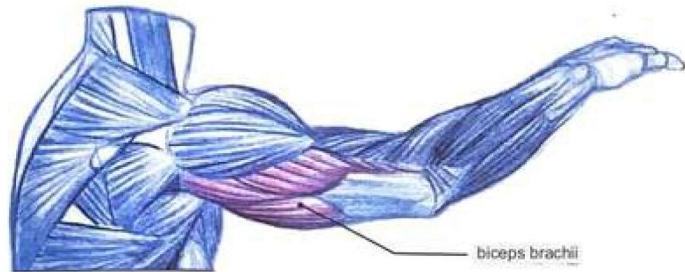
The reason why the femoral joint is bent backward in the shape of a golf club is to create space so that the femur and shinbone do not touch as much as possible when the knee is bent. The femoral condyle is a convex joint and the tibial head is a concave joint. The patella is the cause of the change in shape whenever the knee moves, and is connected to the rough surface of the tibia by ligaments. Because ligaments cannot relax or contract, the gap between the rough surface of the patella and tibia is always the same even when the knee moves, as shown in the figure below. If you look at the leg from the lateral side, the fibula attaches to the outer line of the tibia. The important thing about the calf bone is that the fibula head is attached to the back of the knee, not the center of the tibia head.



Knee shape according to posture

The shape around the knee is heavily influenced by the bones. You need to know the exact position of each bone according to the degree of bending of the knee so that you can create and draw the shape of the knee for each posture without any data. The vastus medialis muscle covers the top of the condyle on the medial side of the femur, so it protrudes more than the volume of the bone. The more the latissimus dorsi muscle develops, the more this area protrudes.

■ Anterior thigh muscles (rectus femoris, vastus lateralis, vastus medialis, oblique femoris)

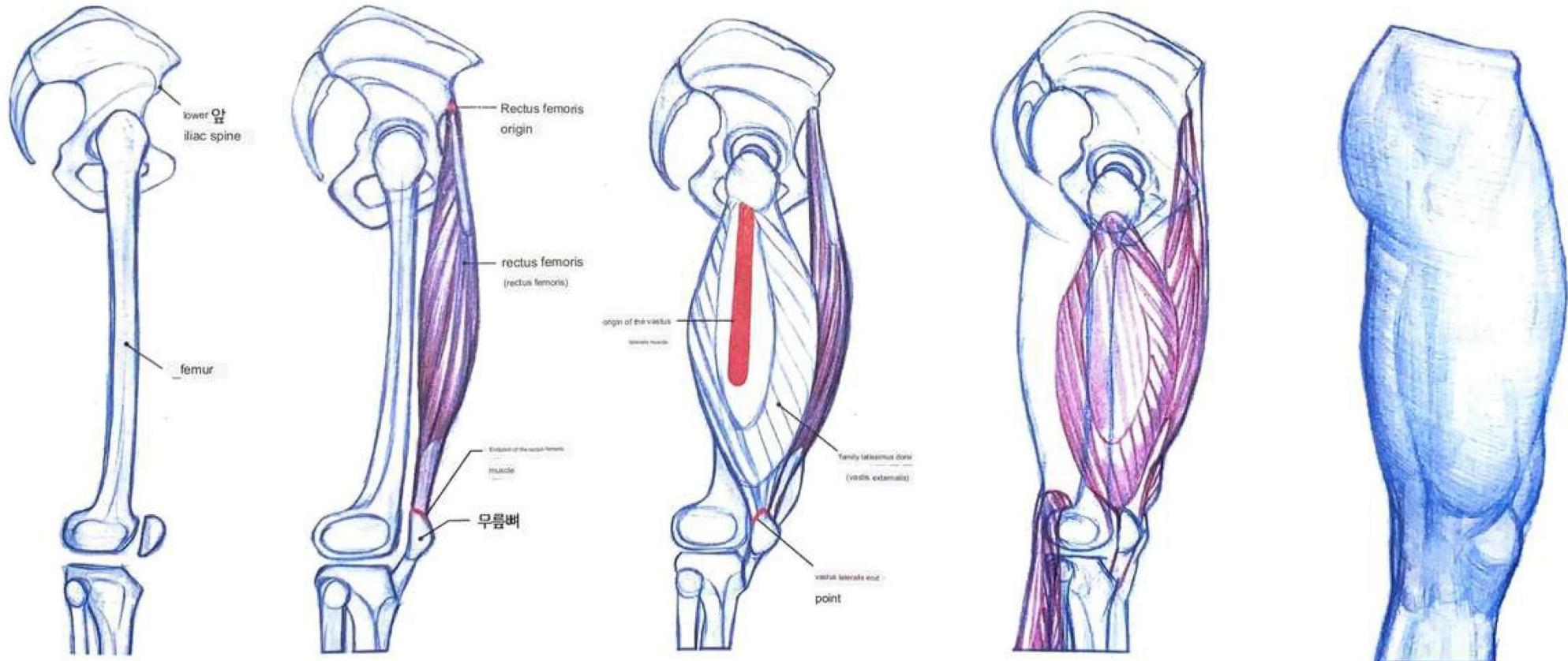


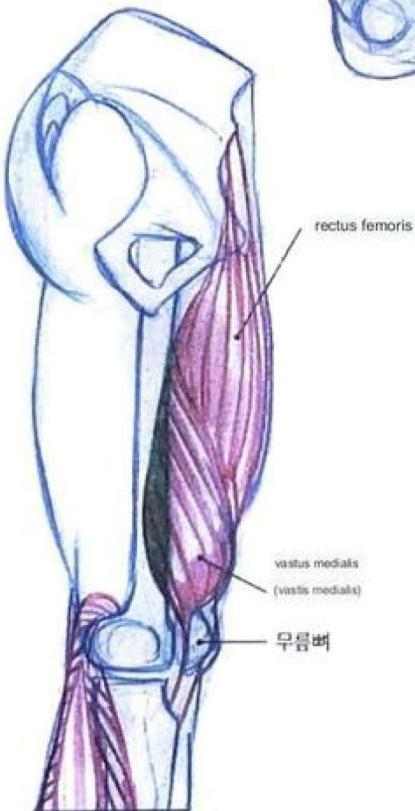
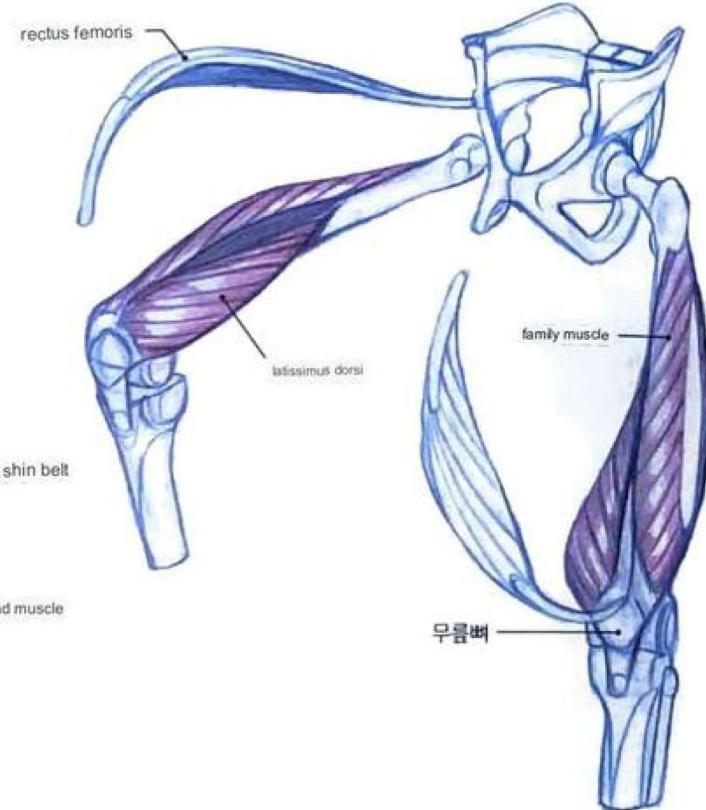
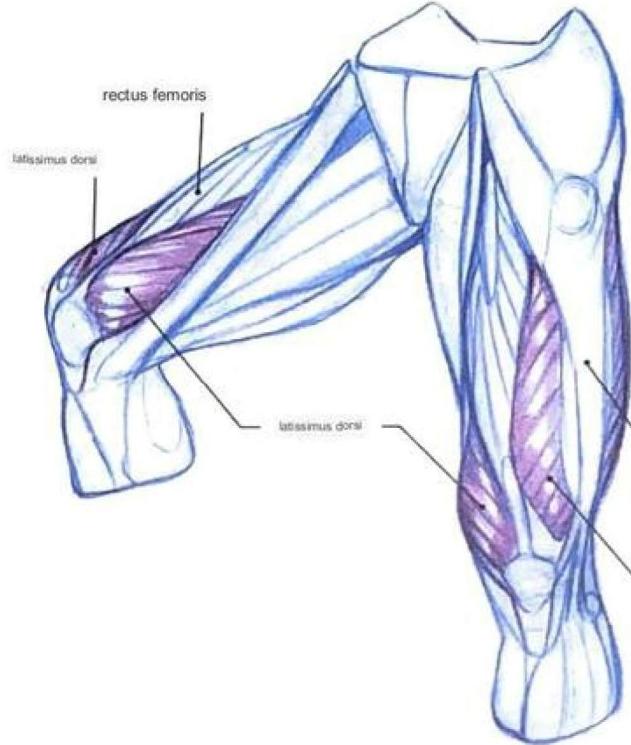
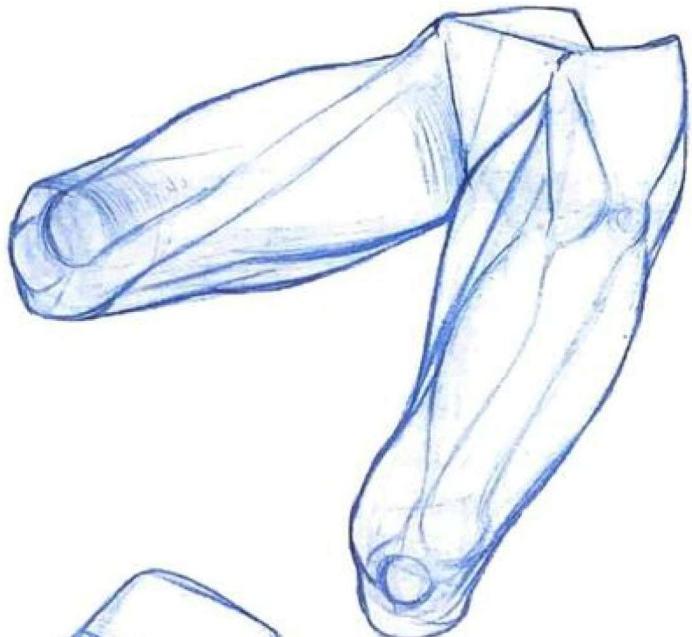
The rectus femoris muscle is the most frontal part of the thigh and the latissimus dorsi muscle is the largest muscle in the lower body.

The muscles in the front of your thigh are used to straighten your knee. Comparable to the arm, it acts like the triceps muscle, which allows you to straighten your arm. When looking at the thigh from the outside, the rectus femoris and the latissimus dorsi muscle are in the front of the thigh. The rectus femoris originates from the lower anterior iliac spine and attaches to the patella.

It is the muscle that stands out the most when looking at the thigh from the front. Next, the quadriceps muscle starts along the lateral aspect of the femur and attaches to the patella. The latissimus dorsi muscle looks small from the front, but when viewed from the side of the thigh, it occupies a large area and volume, and is actually the largest

of the lower body muscles. The outward protruding flow seen in the developed legs of athletes is created by the latissimus dorsi.





### three muscles attached to the patella

When looking at the thigh from the inside side, the vastus medialis muscle and rectus femoris face toward the front of the body.

Since the rectus femoris has been dealt with previously, we will only look at its positional relationship with the vastus medialis.

The vastus medialis originates from the inner line of the femur and attaches to the patella.

In summary, the muscles that stand out from the front of the thigh are the rectus femoris, the vastus familyus, and the vastus medialis.

There are three of these, and even though the starting point of each muscle is different, the ending point of each muscle is the same as the

patella. If you look at the picture above, the vastus medialis and the vastus abdominis are directly attached to the femoral bone,

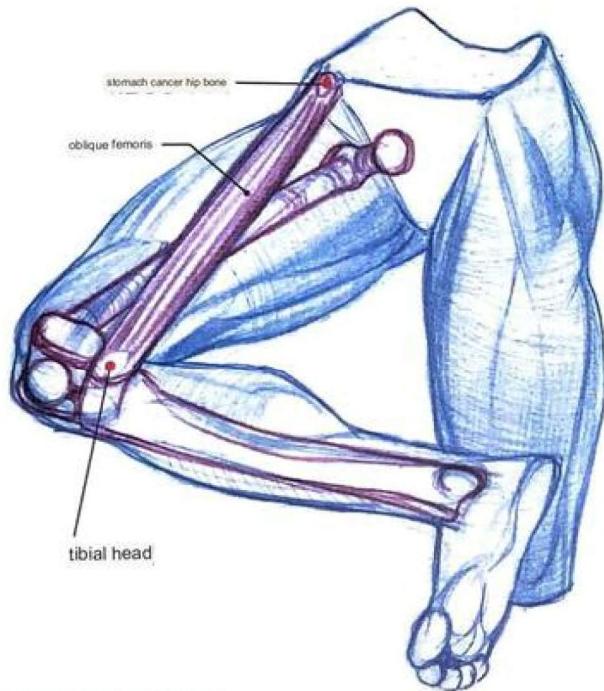
and the rectus femoris covers the top. Of these three muscles, the vastus medialis muscle is the smallest in size, but it is attached

close to the kneecap and has a great influence on the shape of the knee, so be sure to remember it. Looking at

the frontal picture of the lower body on the right, the rectus femoris muscle has the longest tendon length based on the patella bone among

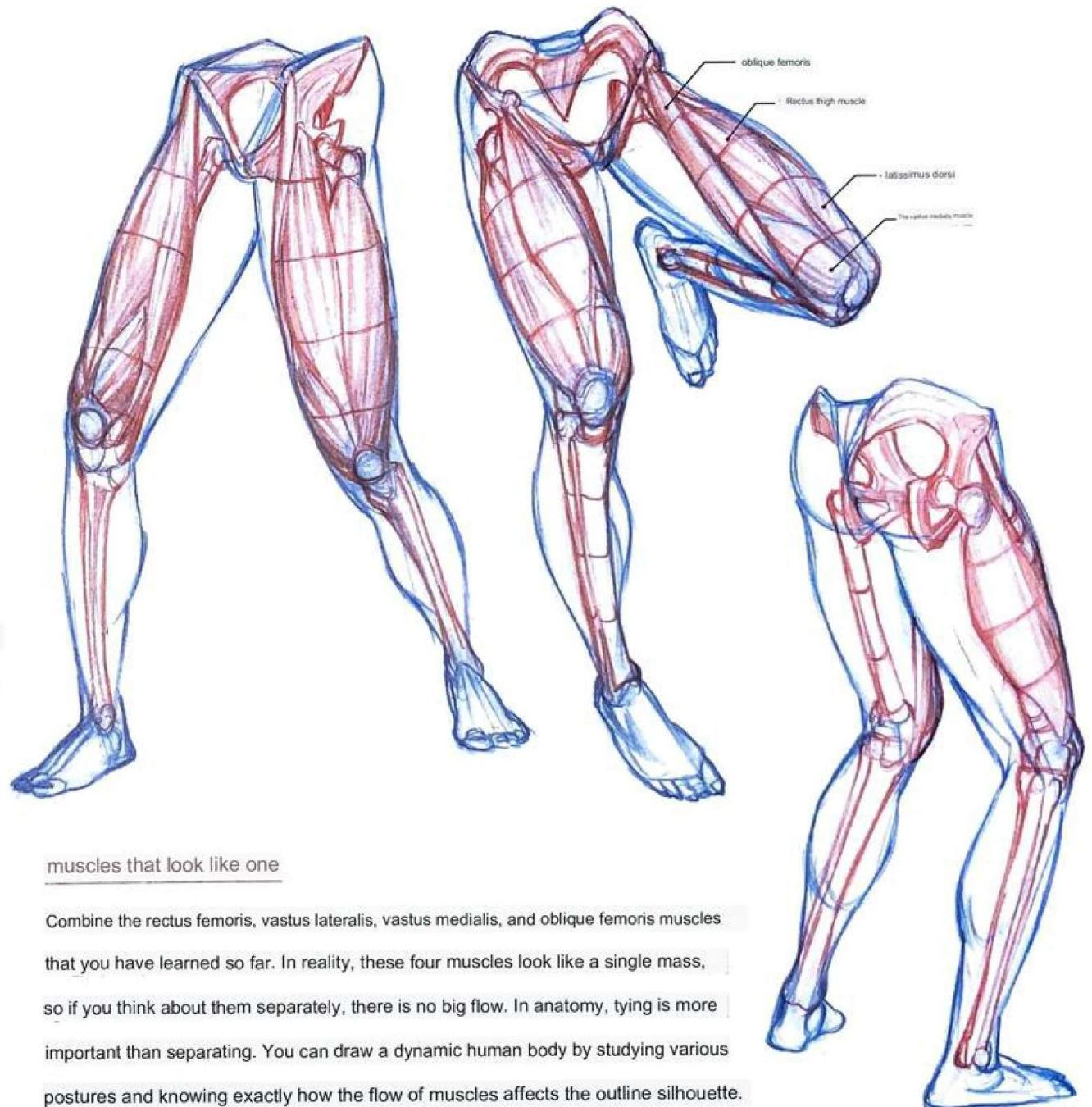
the three muscles, and the inclination of the vastus medialis muscle and the vastus familyus muscle creates a V shape.





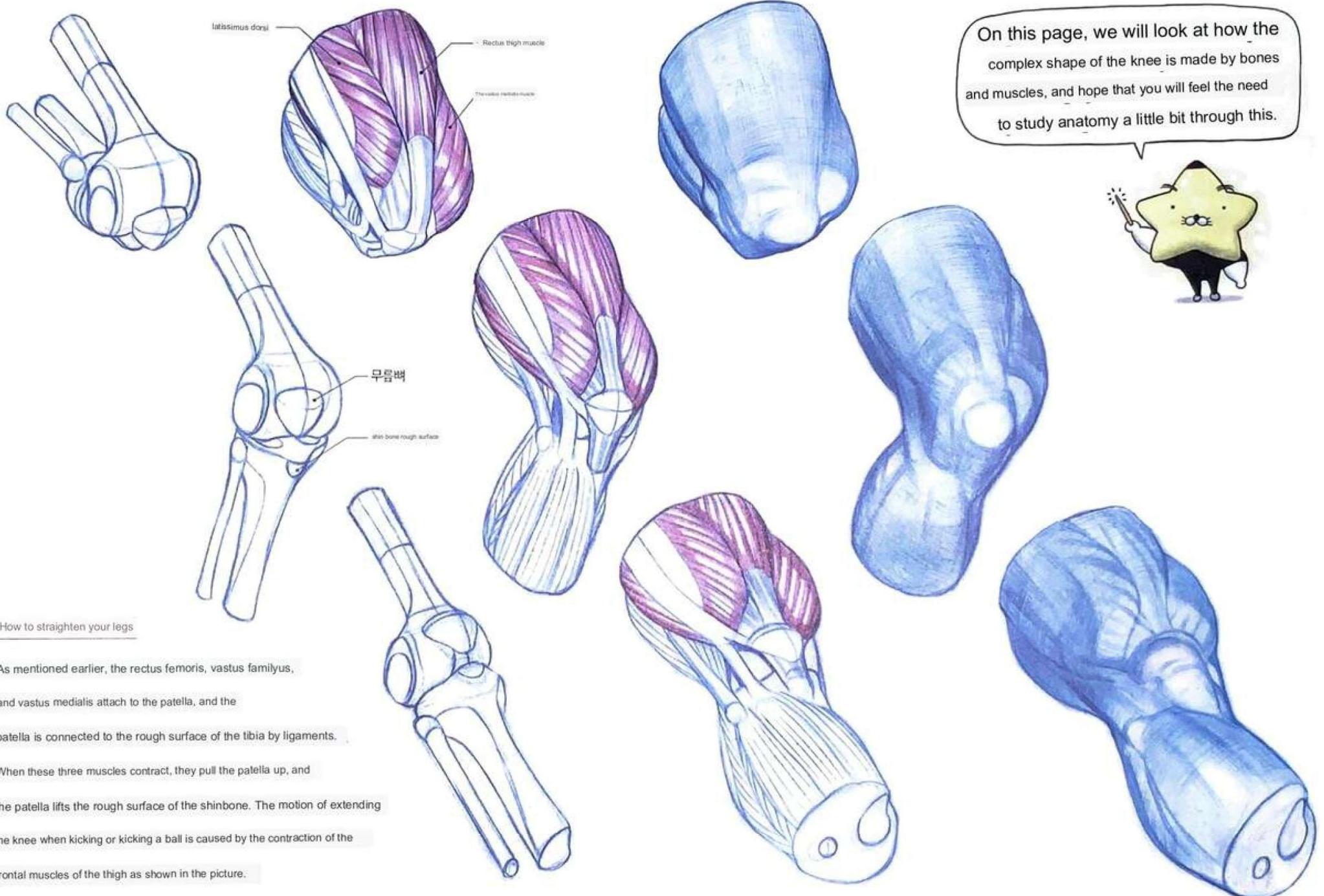
#### About oblique femoris

The oblique femoris muscle visually divides the boundary between the front of the thigh and the inside of the thigh. Therefore, in order to accurately capture the flow of this boundary, we need to know the location of the start and end points. The oblique femoris originates from the superior anterior iliac spine and attaches to the inside of the head of the tibia. As shown in the picture below, this muscle plays the role of lifting the leg while rotating it inward when taking a kicking posture.



#### muscles that look like one

Combine the rectus femoris, vastus lateralis, vastus medialis, and oblique femoris muscles that you have learned so far. In reality, these four muscles look like a single mass, so if you think about them separately, there is no big flow. In anatomy, tying is more important than separating. You can draw a dynamic human body by studying various postures and knowing exactly how the flow of muscles affects the outline silhouette.

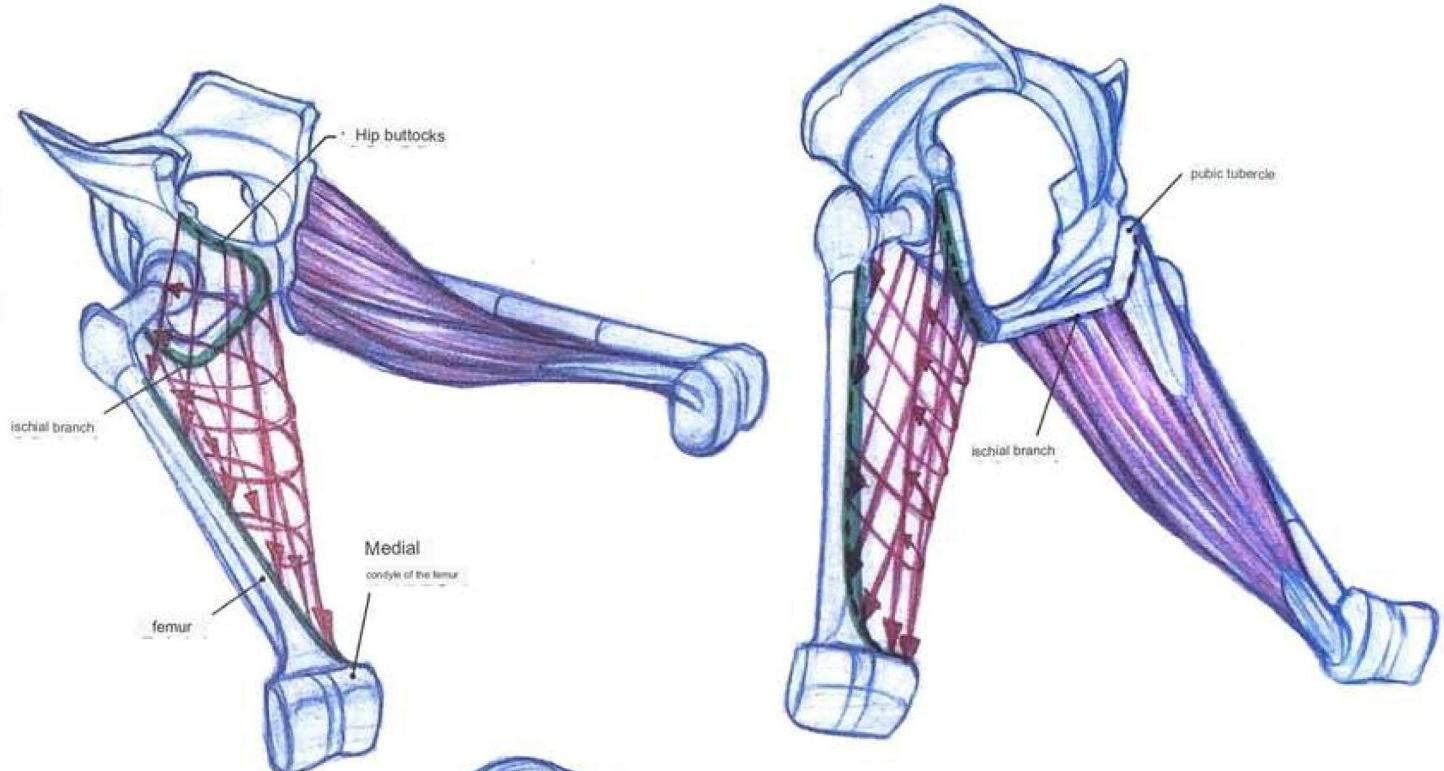


■ Leg levator muscle (adductor muscle group) that brings the legs together

starting point and ending point

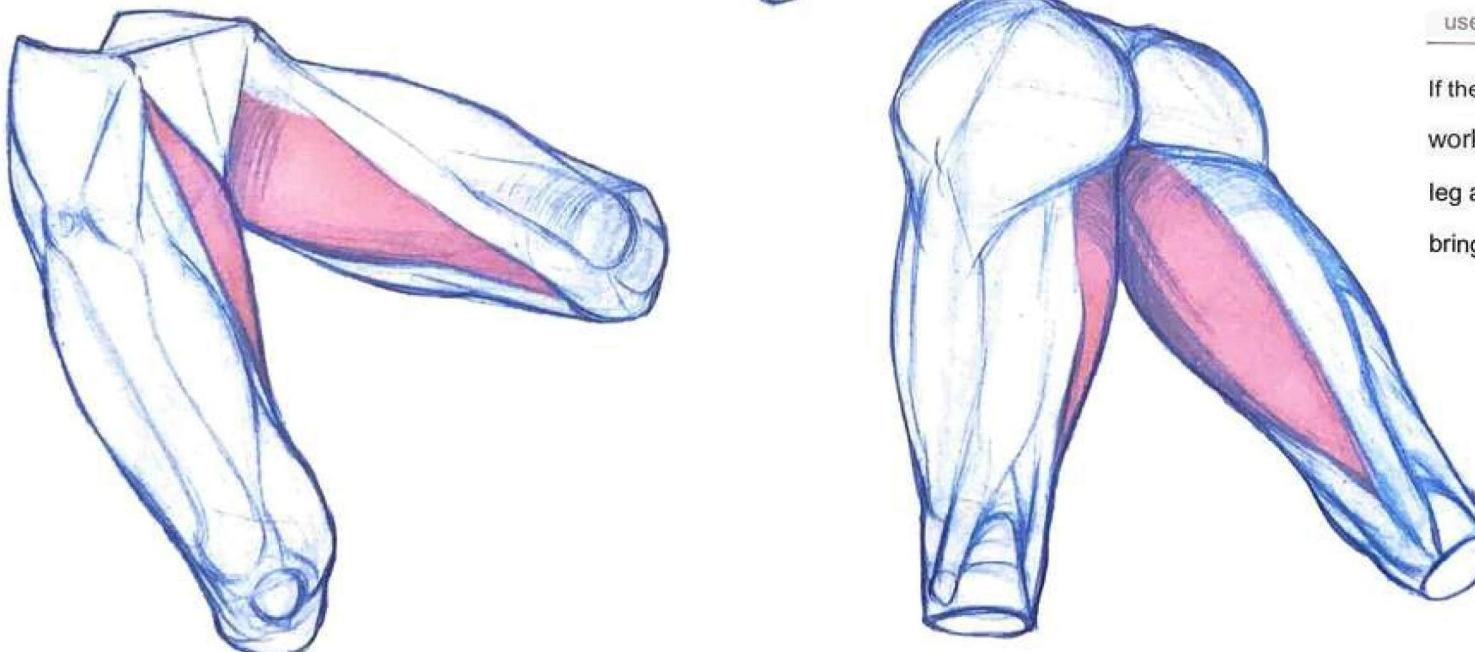
The trapezius muscle is a general term for the large muscle, the tibialis muscle, the short muscle, the long muscle, and the gluteus muscle. These muscles look like a single mass on the outside, so we'll group them together for easy understanding.

The abductors originate from the iliac condyle, the pubic tubercle, and the ischial branch, extending from the upper part of the femur to the medial condyle. It is a muscle that rotates from front to back and is located in three dimensions, so a three-dimensional understanding is required.



#### use

If the buttock muscles learned earlier work to spread the legs outward, the leg adductors learned here serve to bring the legs inward.



Leg levator muscle seen from various angles

If you look at the reason why many students draw their thighs poorly, it is often due to a lack of awareness of the trapezius muscles. Conversely, if you are too conscious of the lower leg muscles, the lower body will be drawn with an excessive sense of thickness. Rather than drawing the trapezius muscle with a rough sense, you need to study in depth through croquis and anatomy.



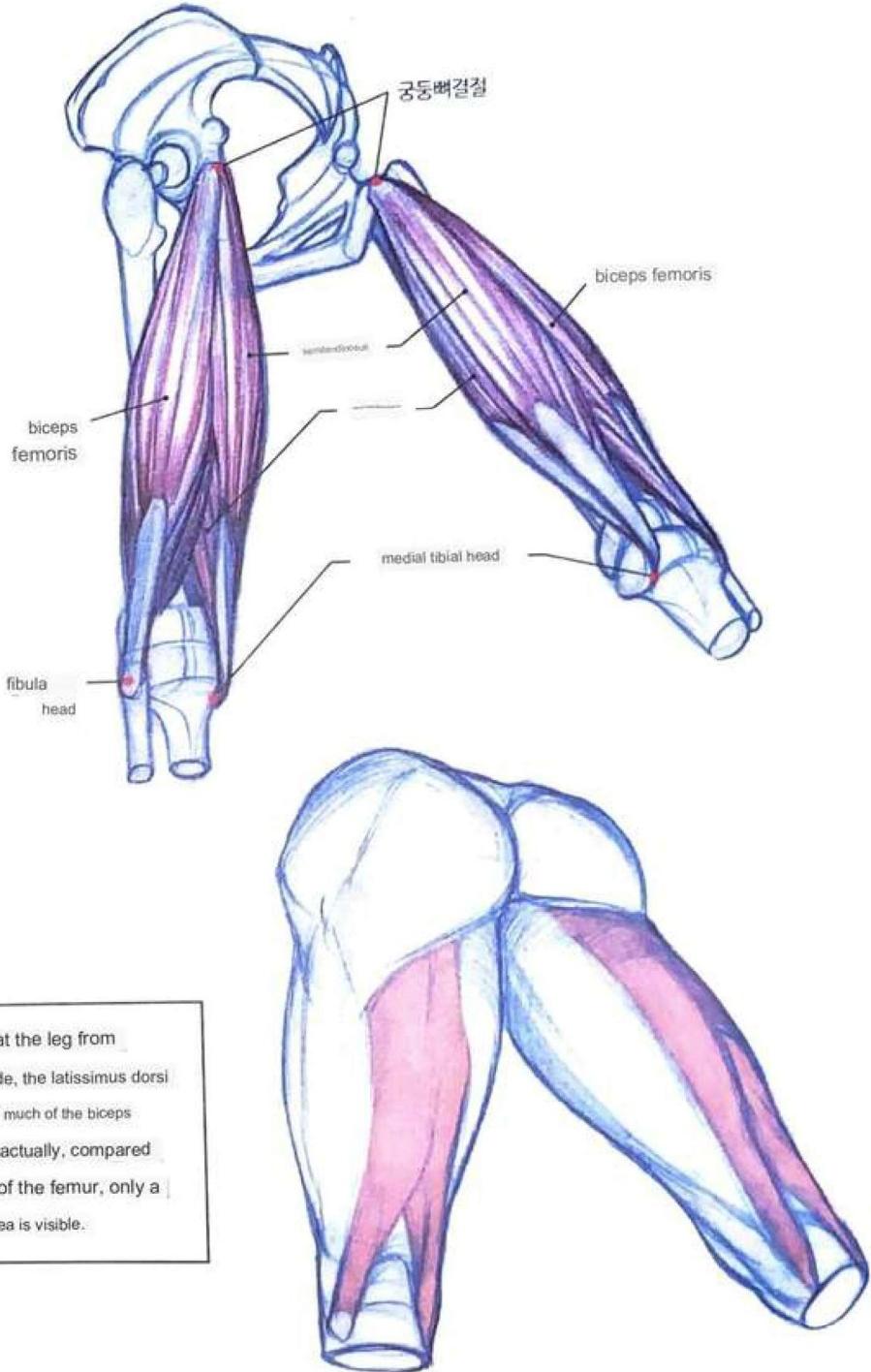
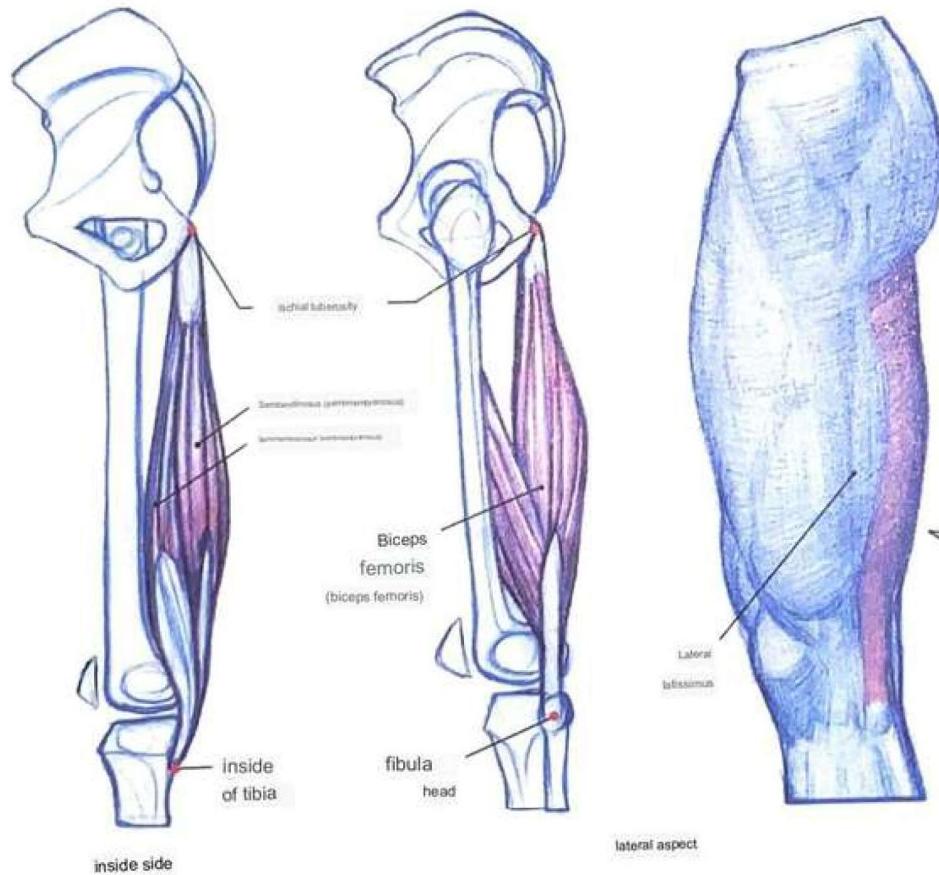


Observe how the abductor muscles are expressed outwardly and how the angle affects the silhouette.

■ Posterior thigh muscles that bend the knee (biceps femoris, semimembranosus, semitendinosus)

starting point and ending point

The posterior thigh muscles consist of the biceps femoris, semimembranosus, and semitendinosus. All three of these muscles originate from the ischial tuberosity. The semitendinosus and semimembranosus are connected to the medial head of the tibia along the inner thigh line, and the semitendinosus is a structure that covers the top of the semimembranosus. The end point of the biceps femoris is the head of the calf bone, which is the lateral thigh line. In this way, it starts from one point and the end point splits into two branches to form a letter shape as shown in the picture on the right.

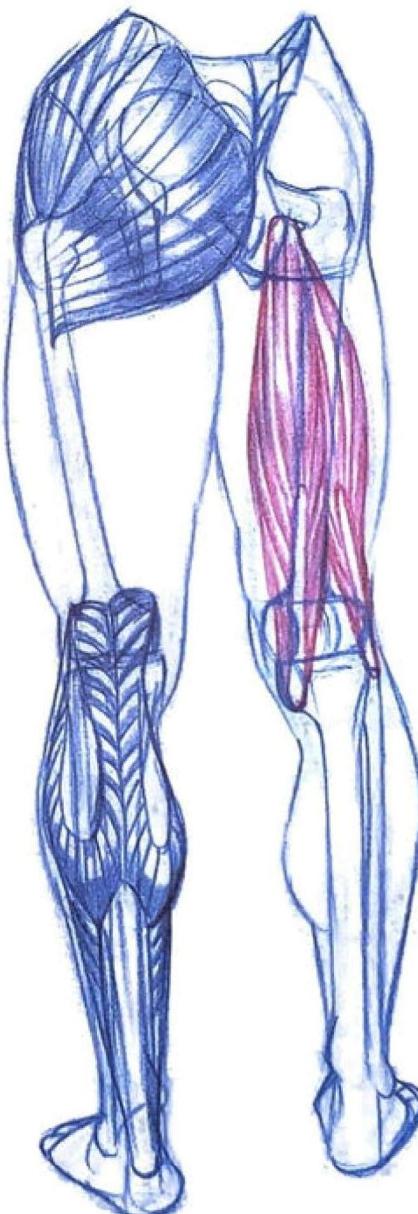
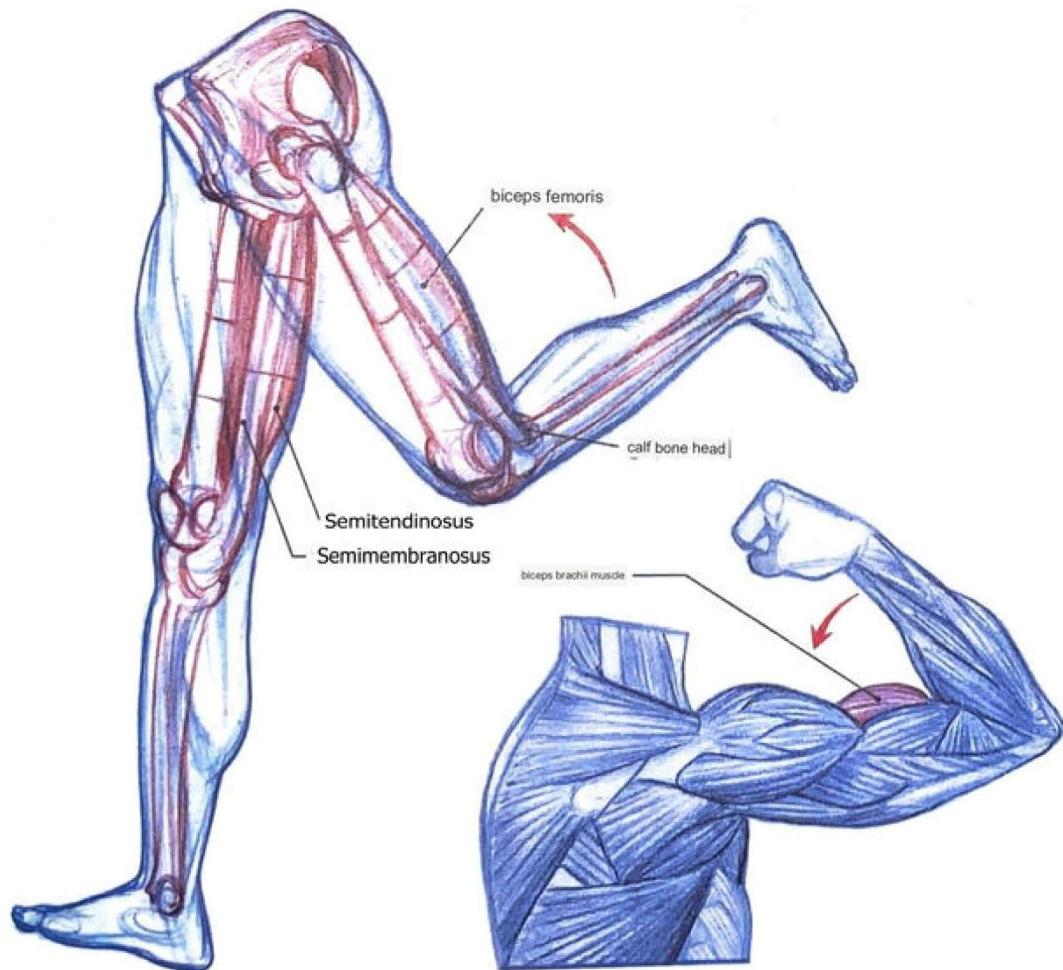


## use

The back thigh muscles are 'flexors' that work the same as the biceps brachii of the arm. The biceps femoris, semitendinosus, and semimembranosus muscles are used when bending the knee backward, and work opposite to the muscles in the front of the thigh.

As shown in the picture below, the motion of kicking off the ground

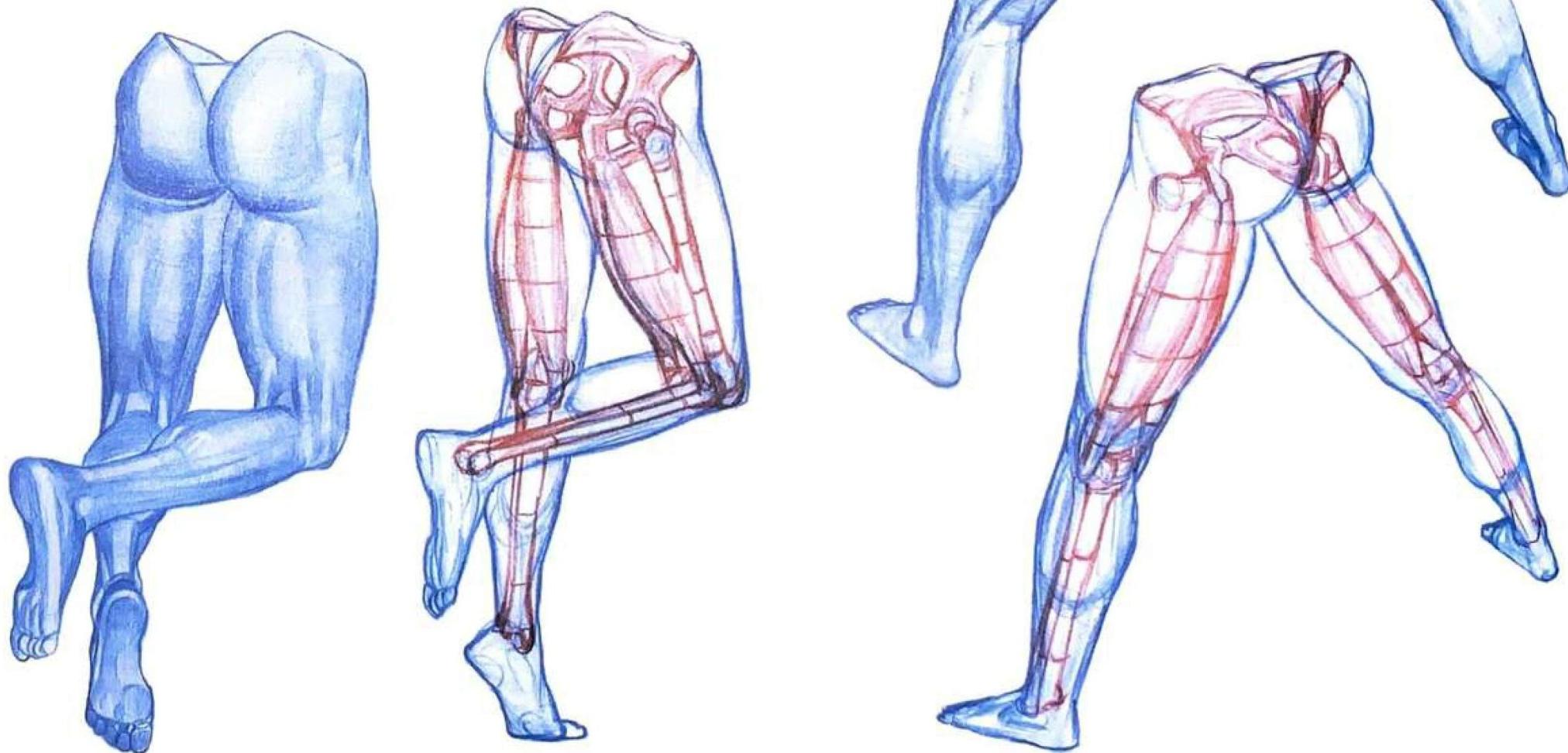
backwards while running is possible thanks to the muscles in the back of the thigh.



Characteristics of the posterior thigh muscles

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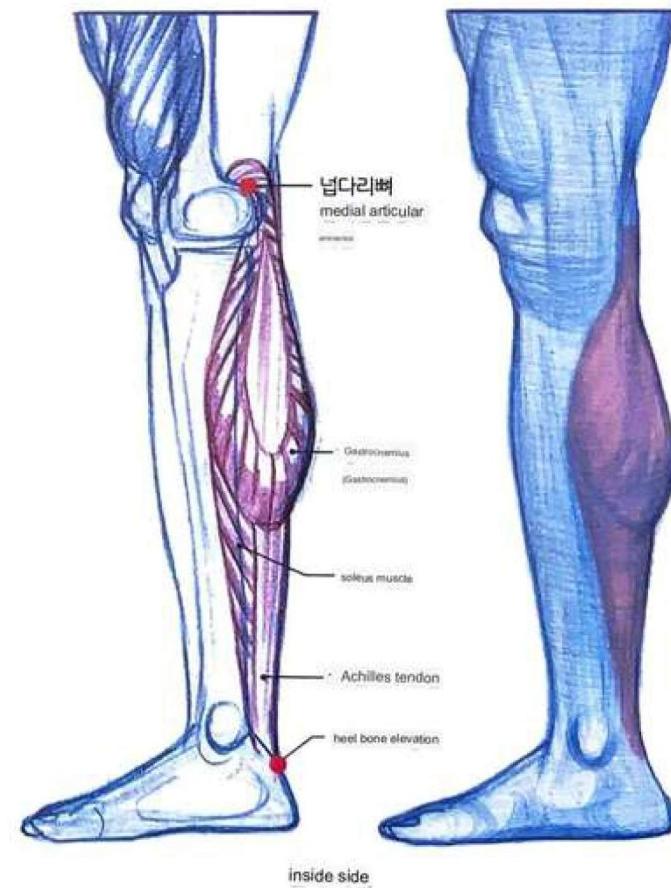
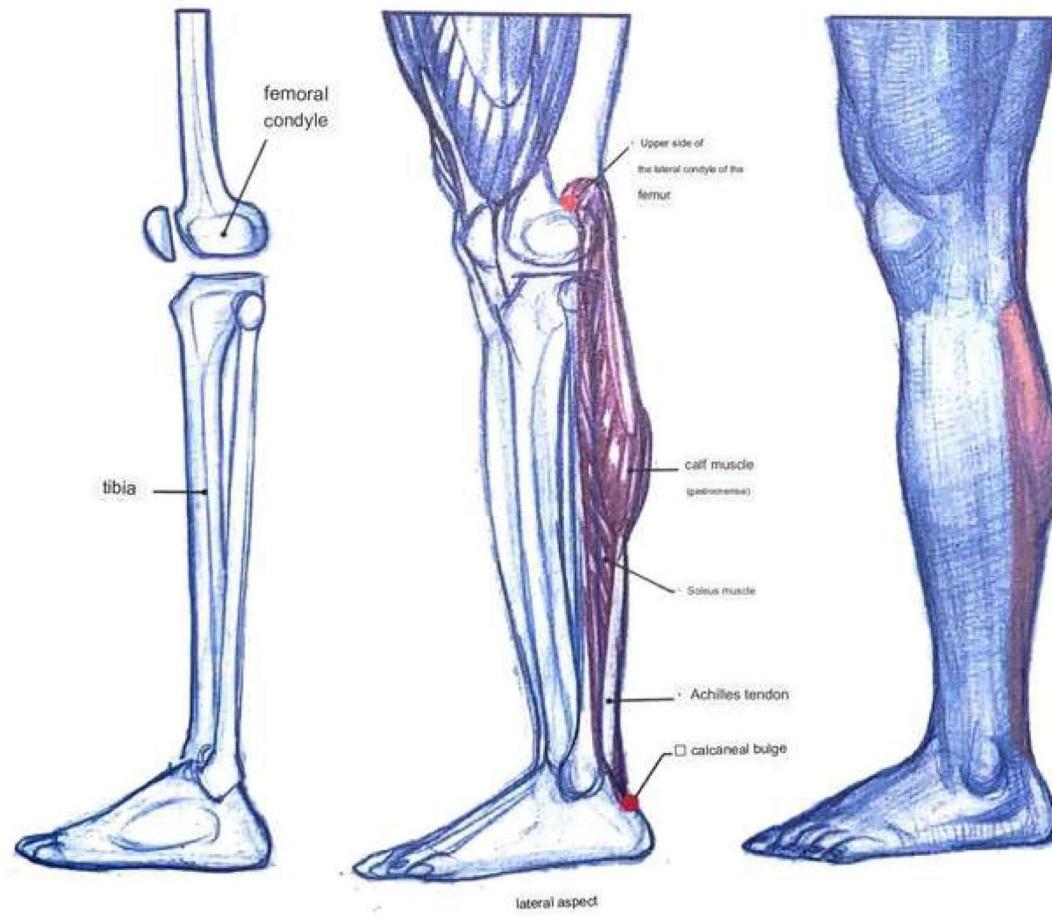
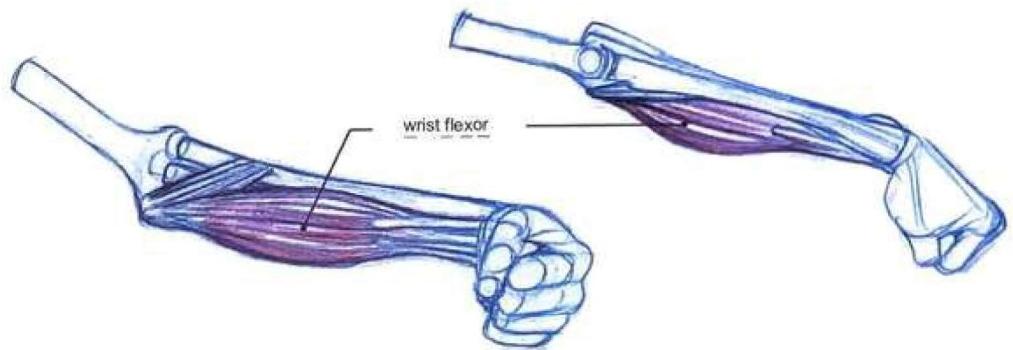
When expressing the biceps femoris, semitendinosus, and semimembranosus, the point is to draw the tendons protruding tautly from the back of the knee. In particular, the tendon point where the biceps femoris on the outside is connected to the head of the calf bone stands out prominently regardless of gender. Therefore, it is very important to accurately know the location of the fibula head and the direction of the tendon of the biceps femoris. As you look at the pictures on this page, take a closer look at how the muscles in the back of your thigh are split in two when you bend your leg, and when you straighten your leg, it's bundled together because you don't have enough strength.



### Muscles of the back of the calf (calf muscle, soleus muscle)

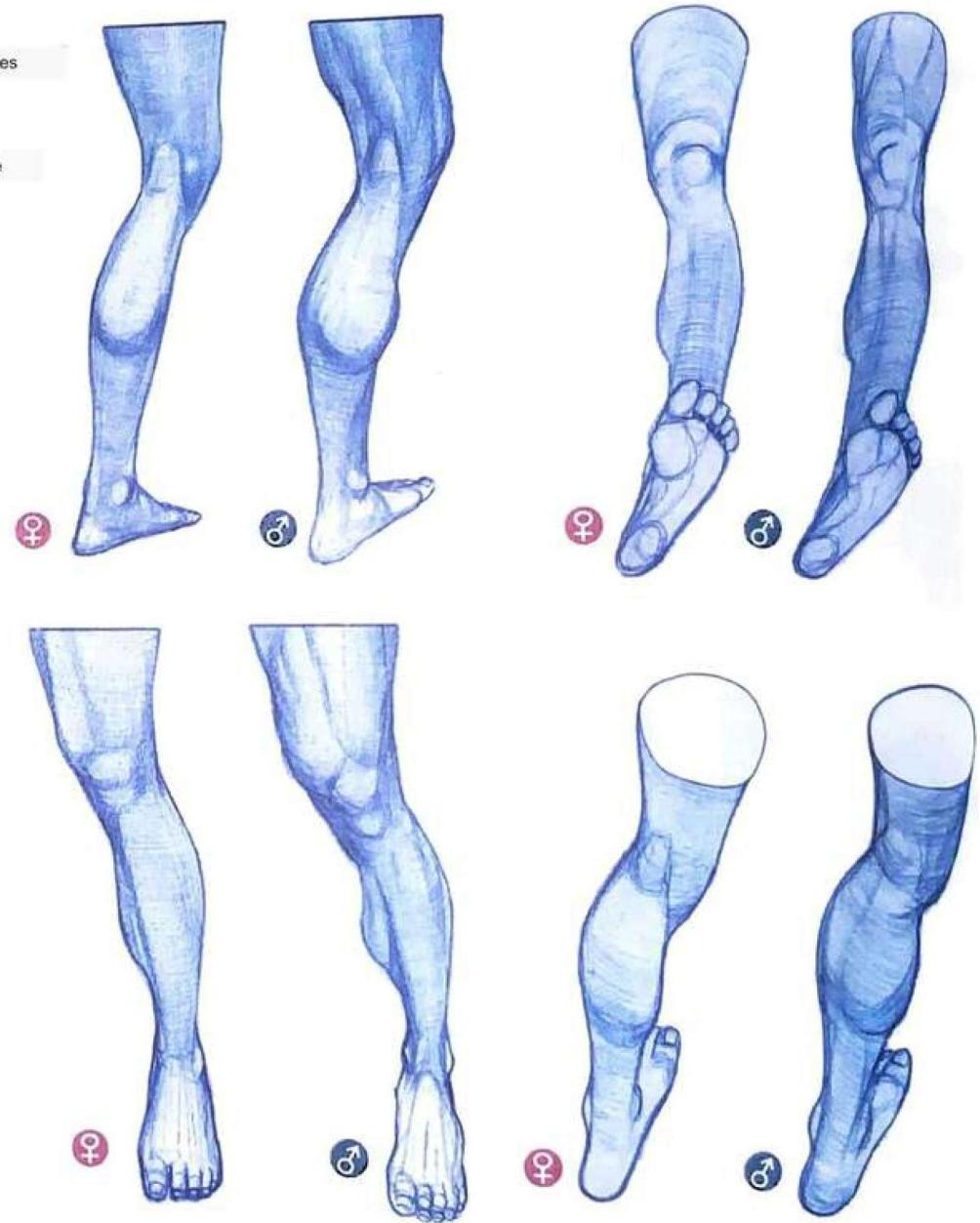
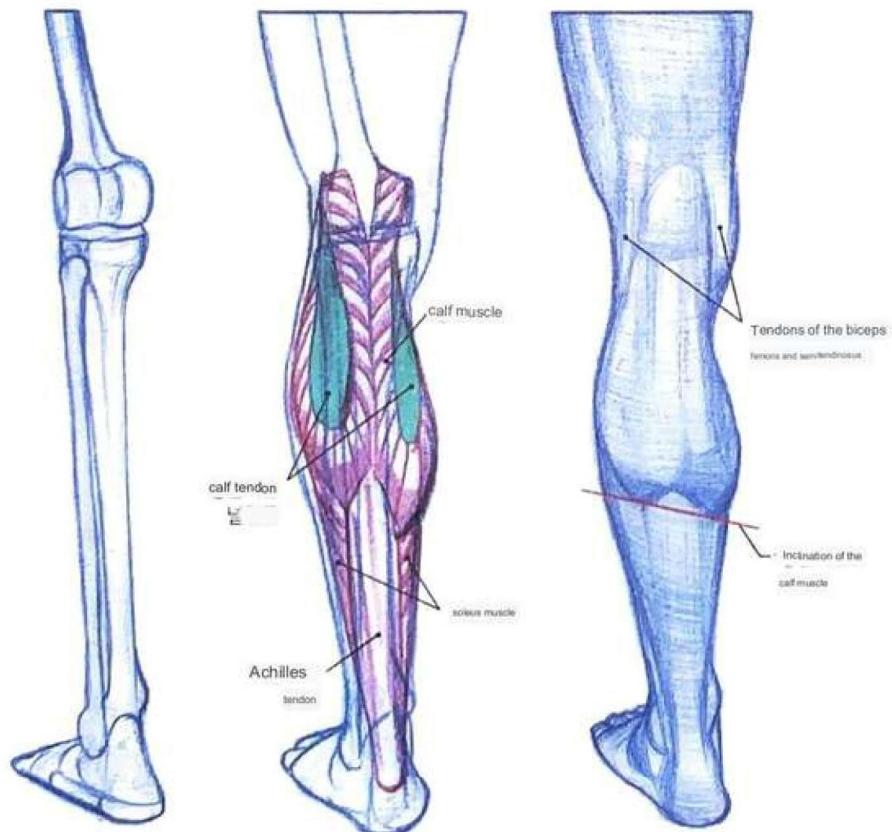
starting point and ending point

Compared to the arms, the muscles on the back of the calf, which play a role similar to the wrist flexors, have the soleus muscle attached to the tibia and the calf muscle superimposed on it. The calf muscle is divided into two branches, each starting on the medial and lateral superior surfaces of the femoral condyle, and turning into the Achilles tendon at about a point along the entire length of the calf muscle. The Achilles tendon attaches to the calcaneal eminence. The soleus muscle is mostly covered by the calf muscle, so only a little bit is visible on each side. We will go into more detail in Chapter 4 to come.



#### characteristics of the calf

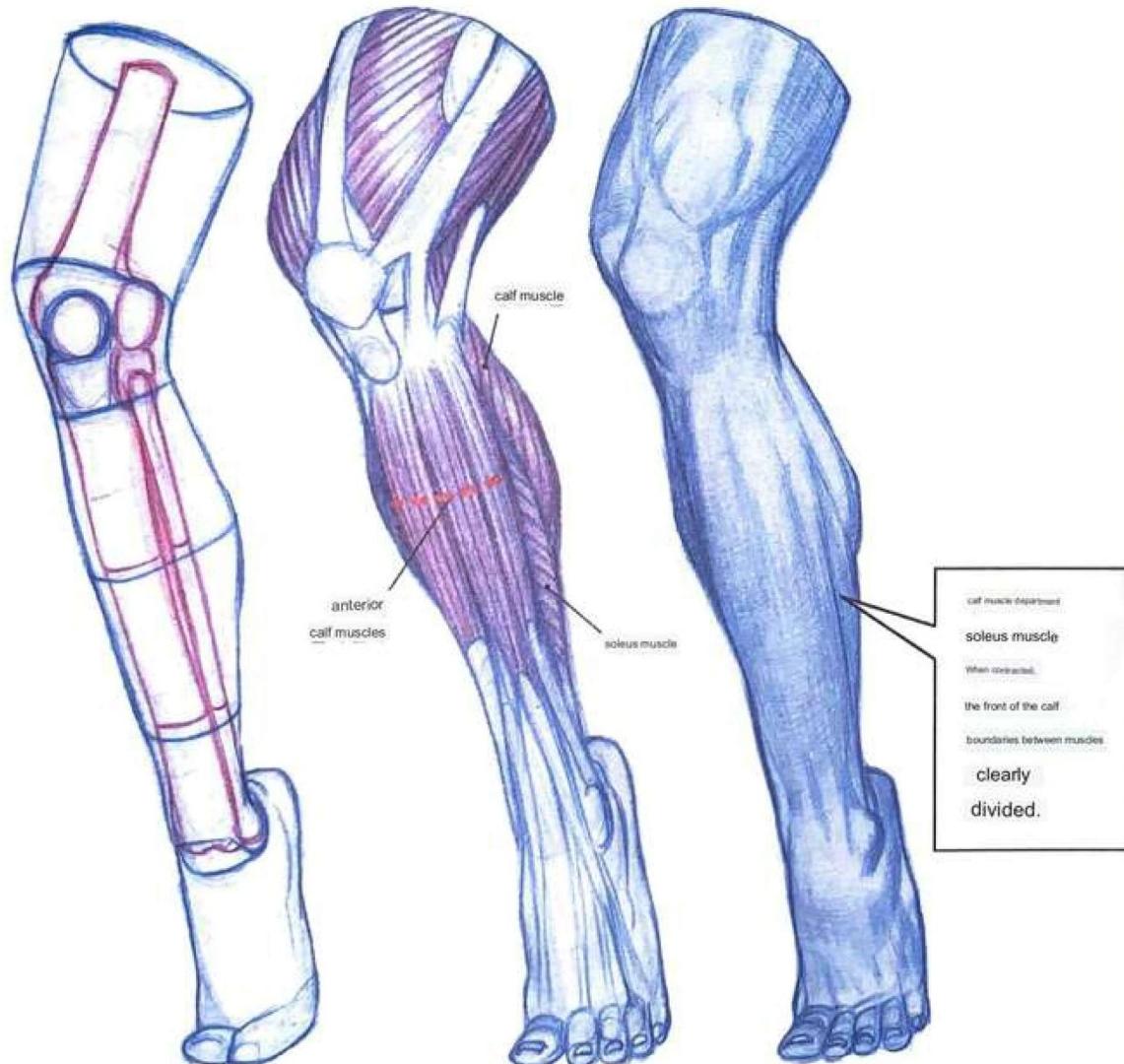
In the picture below, you can see the gastrocnemius muscle, which begins with the two branches mentioned above and merges with the soleus muscle at the Achilles tendon. The back of the knee is a form in which the upper part of the calf muscle digs between the rulers of the biceps femoris muscle and the semitendinosus muscle. The part marked in green in the figure is the tendon area of the calf muscle. Observe the difference between the two shapes as the tendon area is flat and the tendon part has a thick volume. Since the length of the inner calf muscle is longer than the lateral calf muscle, this slope should always be expressed for a natural calf flow. The calf area is difficult to express because the flow is constantly changing depending on the angle. You need to accurately understand both the curve of the bone and the flow of the calf muscles to express the various flows of the calf according to the angle.



Let's observe the difference in shape due to muscle mass between men and women from various angles.

When the calf muscles and soleus muscles contract, the heel is pulled up to create a tiptoe position. It is a muscle used in most basic movements such as jumping, walking, and running.

Pay close attention to where it changes from tendon to sinew!



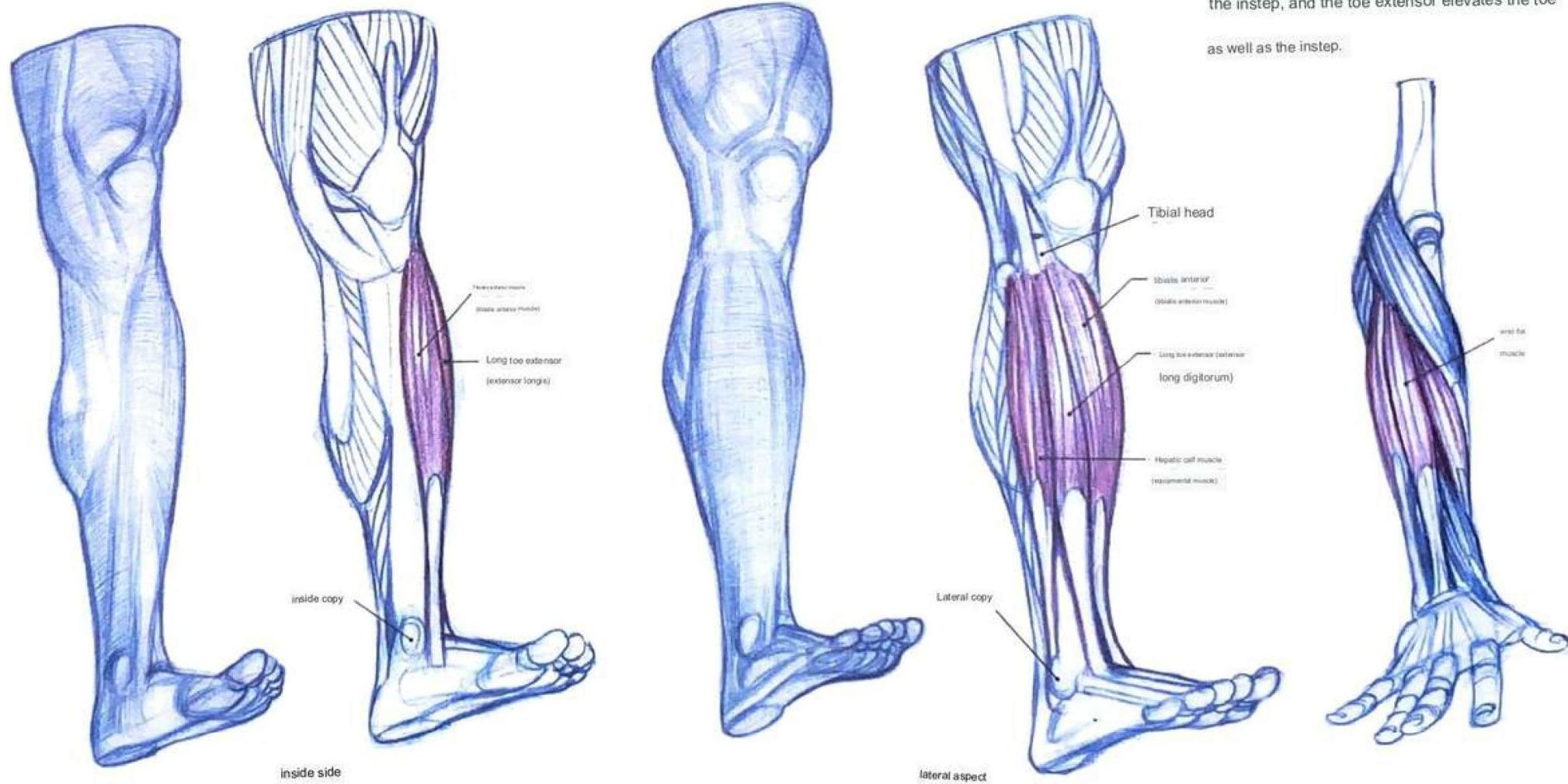
## ■ Anterior calf muscles (tibialis anterior, extensor toes, calf longus)

### Starting point and ending point

Just as the wrist extensors are largely divided into three strands, the muscles in the front of the calf are also divided into three groups. The anterior tibialis muscle and extensor toe muscle originate from the tibia head, and the calf long muscle originates from the fibula head. The anterior tibialis muscle goes in front of the medial oblique muscle and attaches, and the long toe extensor muscle goes in the middle of the instep and attaches to each of the four toes except the big toe. The long calf muscle goes behind the family foot and attaches to the sole of the foot. There are other small muscles, but they are not very noticeable in appearance, so I will omit them.

### use

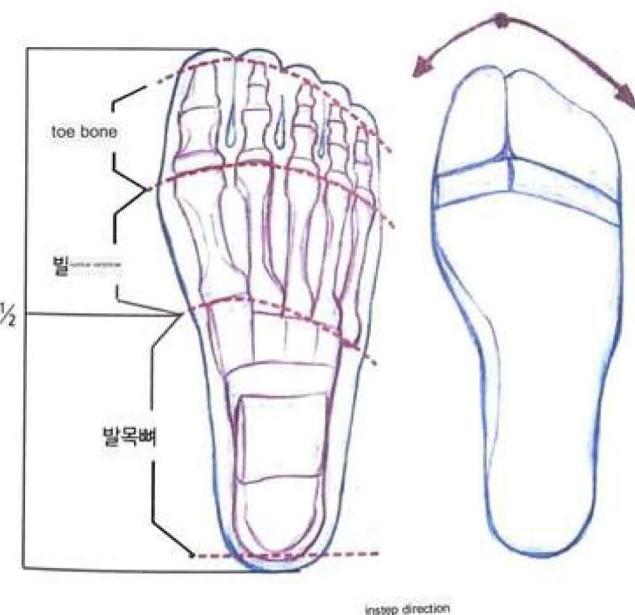
The muscles in the front of the calf are commonly used to elevate the instep, and work in opposition to the muscles in the back of the calf. The tibialis anterior muscle and the calf longus elevate the instep, and the toe extensor elevates the toe as well as the instep.



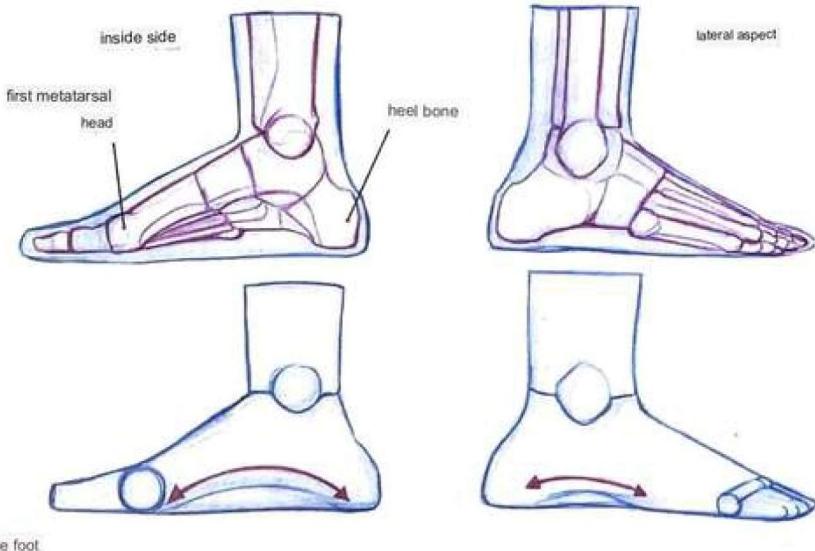
## Foot movement and flow

The relationship between the center of gravity and the heel

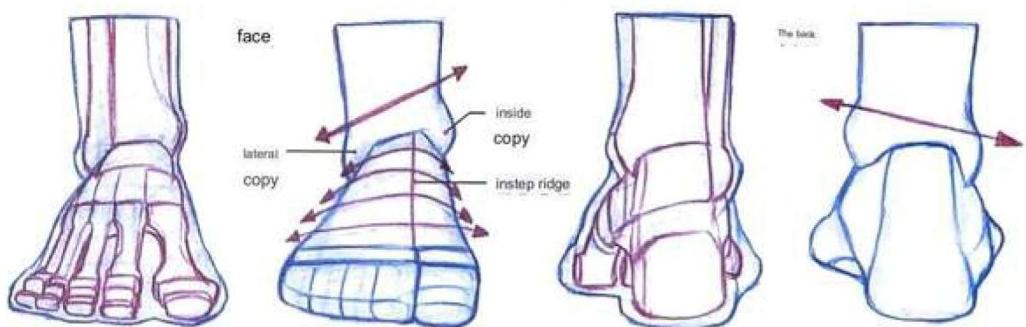
When studying the human body, we tend to neglect the farthest part from the face, the feet. However, the feet are the part of the body where the human body and the ground directly come into contact. If the feet are drawn in an unstable form, even if the center of gravity is correct in the posture itself, the center of gravity will collapse when viewed as a whole. For example, if the shape of our foot is like a horseshoe, the posture of holding the center of gravity should change according to the shape of the foot. Human beings have the current flow of the human body by adjusting the center of gravity to suit the current shape of the foot. The foot is basically divided into toe bones,  $\frac{1}{2}$  metatarsal bones, and ankle bones. The point of the entire foot is where the metatarsal and tarsal bones meet. The line connecting the ends of the toes curves down, on average, around the point where the thumb and index toe meet. When drawing feet, it's easy to think of drawing feet wearing socks. In this book, rather than approaching the foot anatomically, I will briefly explain the movement and flow of the joints.



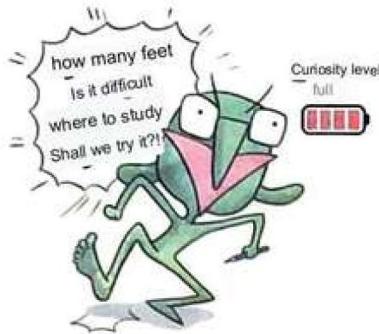
front and back of the foot



When looking at the feet from the medial and lateral sides, the common feature is the appearance of an arcuate flow, and the difference is that the arch is wider on the medial than in the family. This arch serves as a cushion to support your weight.



If you look at your foot from the front, it changes from level to arch as you go up from the tip of the toe to the instep. The instep ridge, which is the center of the arch, is located on the border between the thumb and index finger. You can see from the picture above that the flow of the inner arch is steep and the flow of the family arch is gentle around the instep ridge. The arch form from the front also provides a cushioning effect just like the side. The inclination of the malleolus on both sides of the ankle is not horizontal, and the medial malleolus is higher than the lateral malleolus.

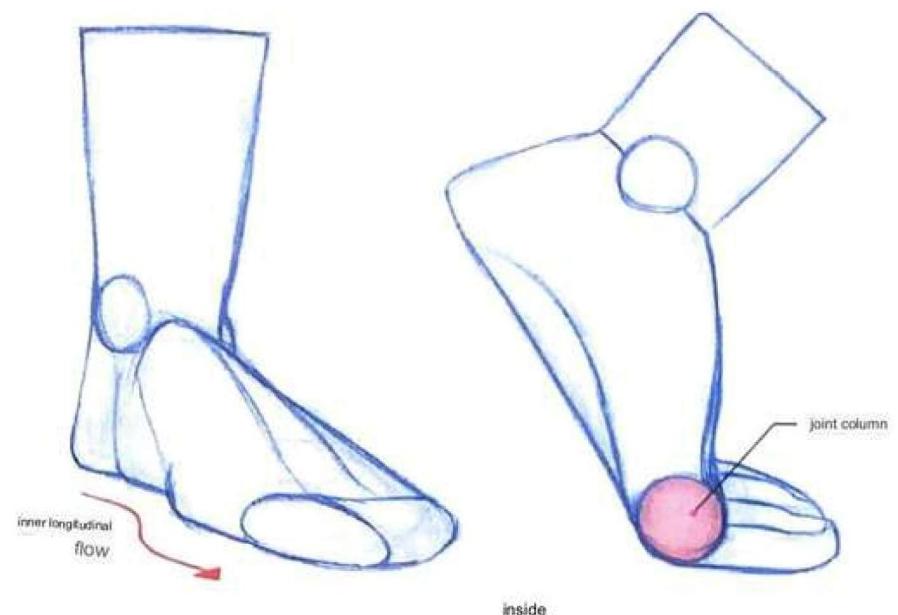
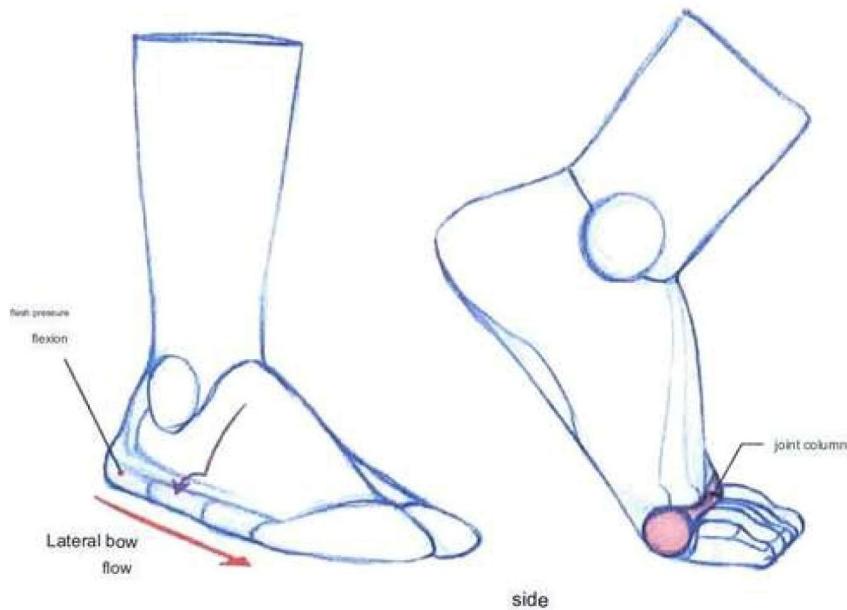


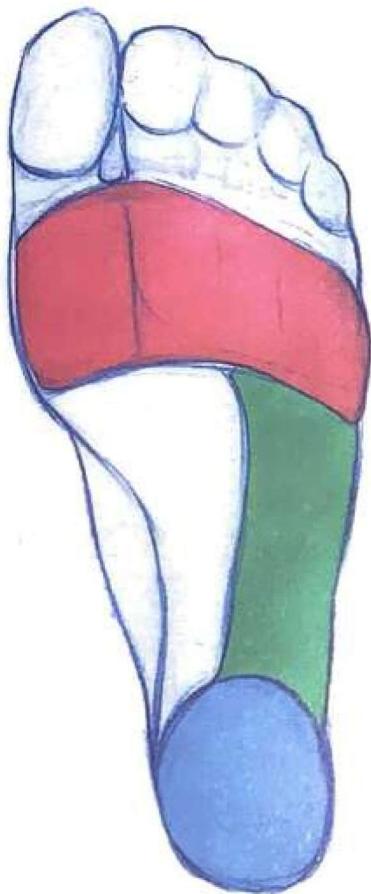
#### side-to-side movement of the ankle

Looking at the left and right movements of the ankle, the ankle bends more inward than outward. The reason is the position of the ankle bone. The lateral malleolus is located lower than the medial, limiting outward movement (right picture). This is why we often fold inwards rather than outwards in our daily lives.

#### foot features

To simply understand the movement of the toes, tie them with the big toe and the other four toes, and then move the toes around the joint pillar (picture below). The familial arch of the foot is straight and the medial longitudinal arch is curved. Please be careful as many students often make the mistake of drawing the flow of the family vertical bow curved like the inner vertical bow. As in the first picture, when the foot touches the floor, the lateral blade is pressed by the body weight, creating a flexion of the flesh. When looking at the foot from the family, the entire toe is visible, and when viewed from the inside, the rest of the toes except for the thumb and index finger are covered.





area of the sole of the foot

We usually rarely draw angles where the soles of the feet are visible.

Because there is not enough research on the soles of the feet

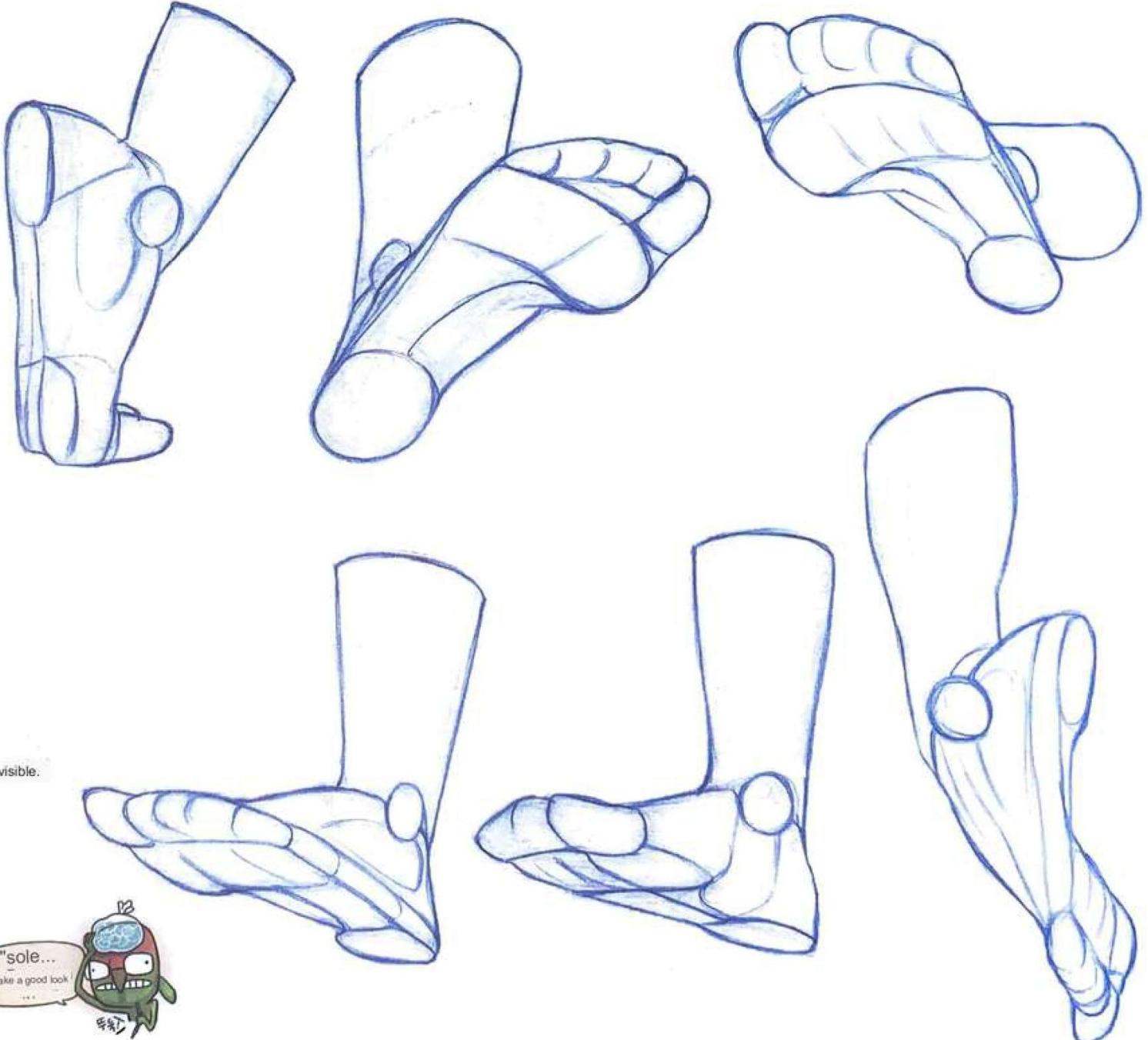
I find it vaguely difficult.

In that case, as shown in the picture above, the sole of the foot is divided into three areas.

It's easier to understand if you think about it.

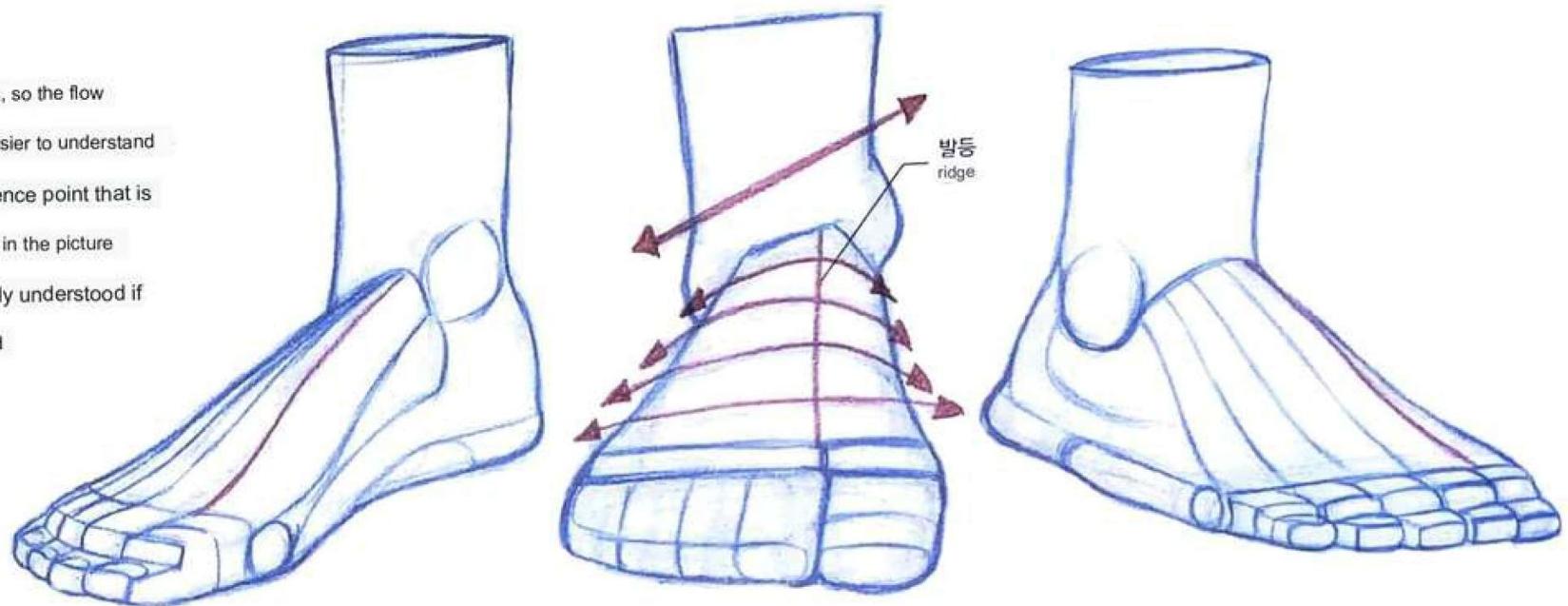
By applying this method, the soles of the feet

Practice drawing the angle you see.



#### baseline of the foot shape

The instep is arched in front, back and sideways, so the flow changes greatly depending on the angle. It is easier to understand the shape if you draw a picture with a reference point that is representative of any complex shape. As shown in the picture on the right, the structure will be more clearly understood if you divide the inner side and the lateral side based on the highest instep ridge.



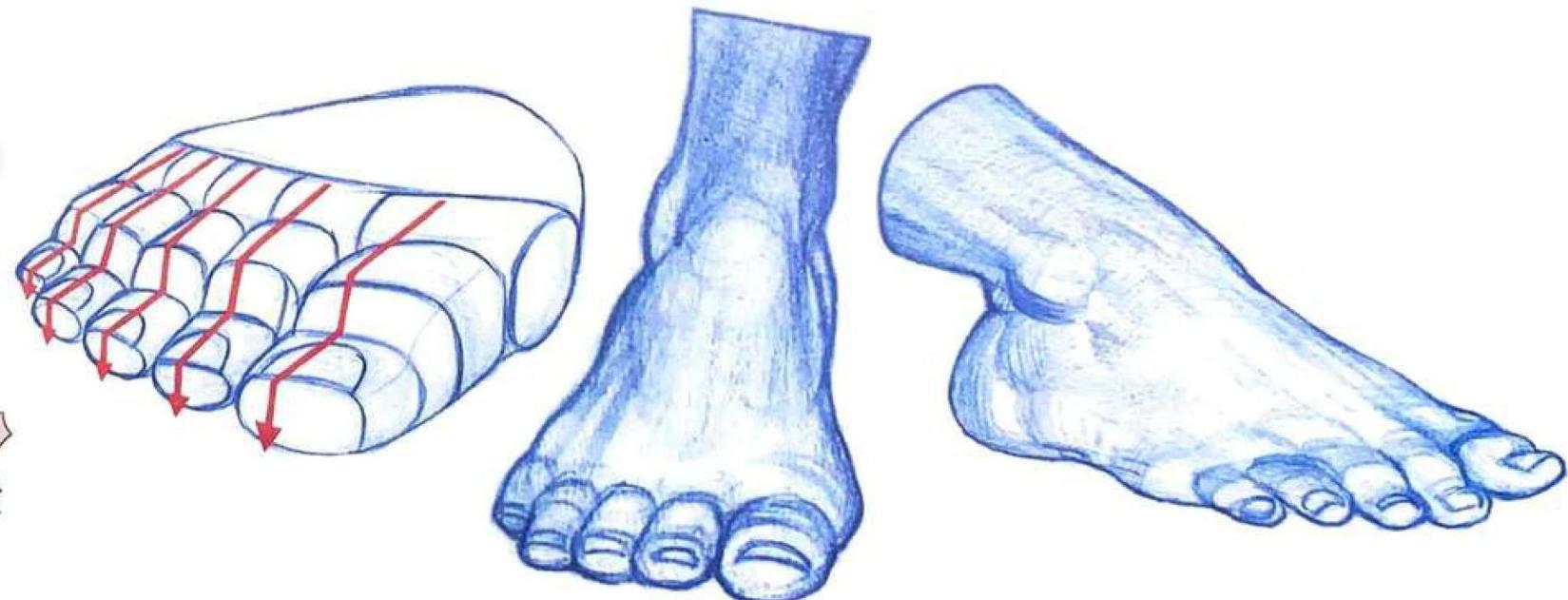
#### structure of the toe

If the structure of the toe is simplified into a figure,

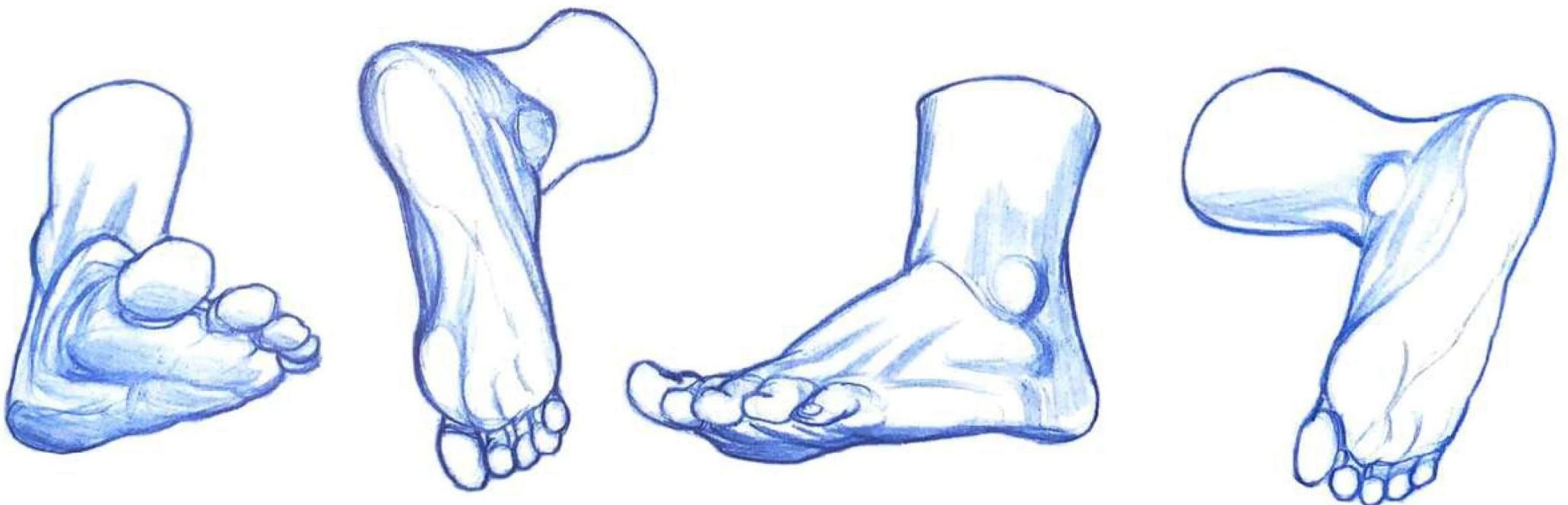
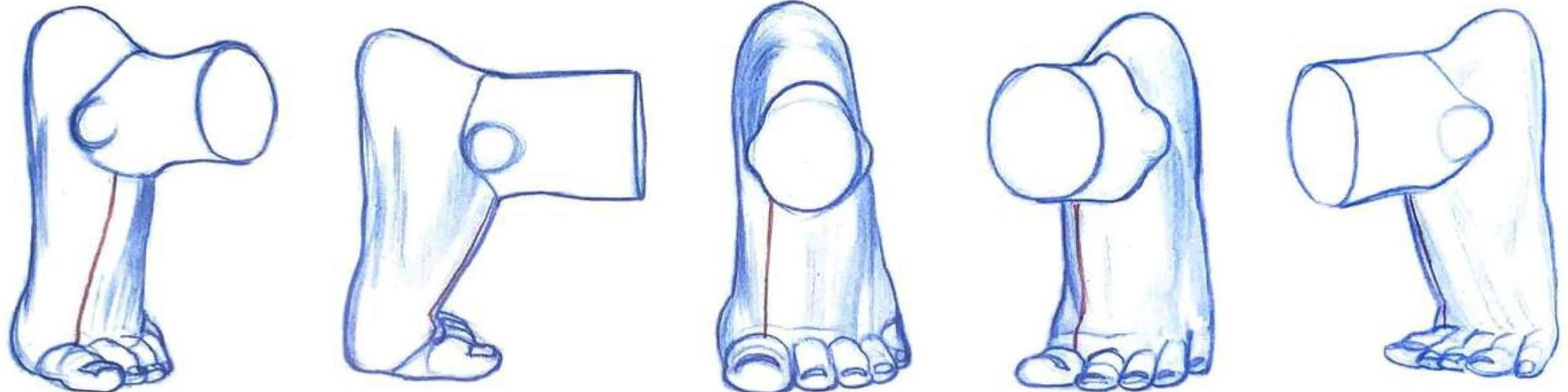
Angles are cascaded.

On top of this basic flow

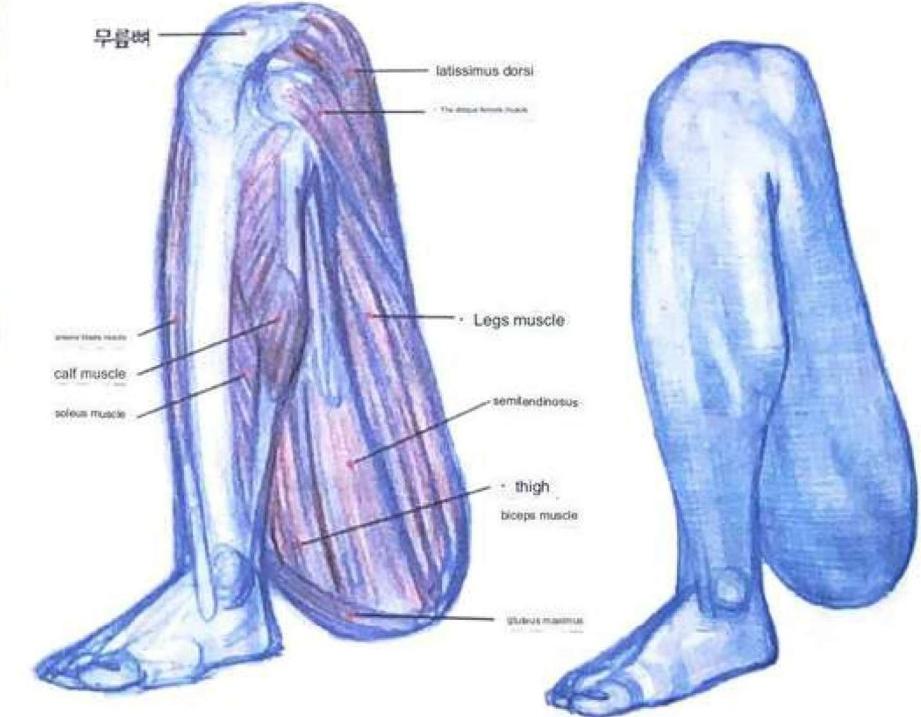
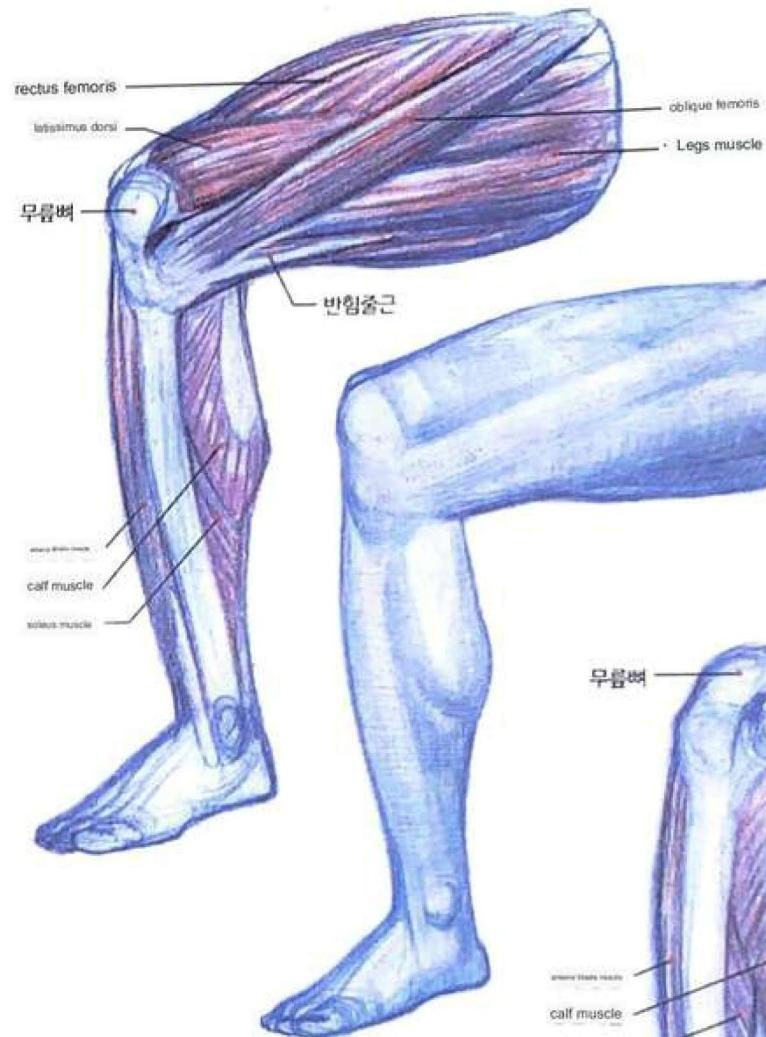
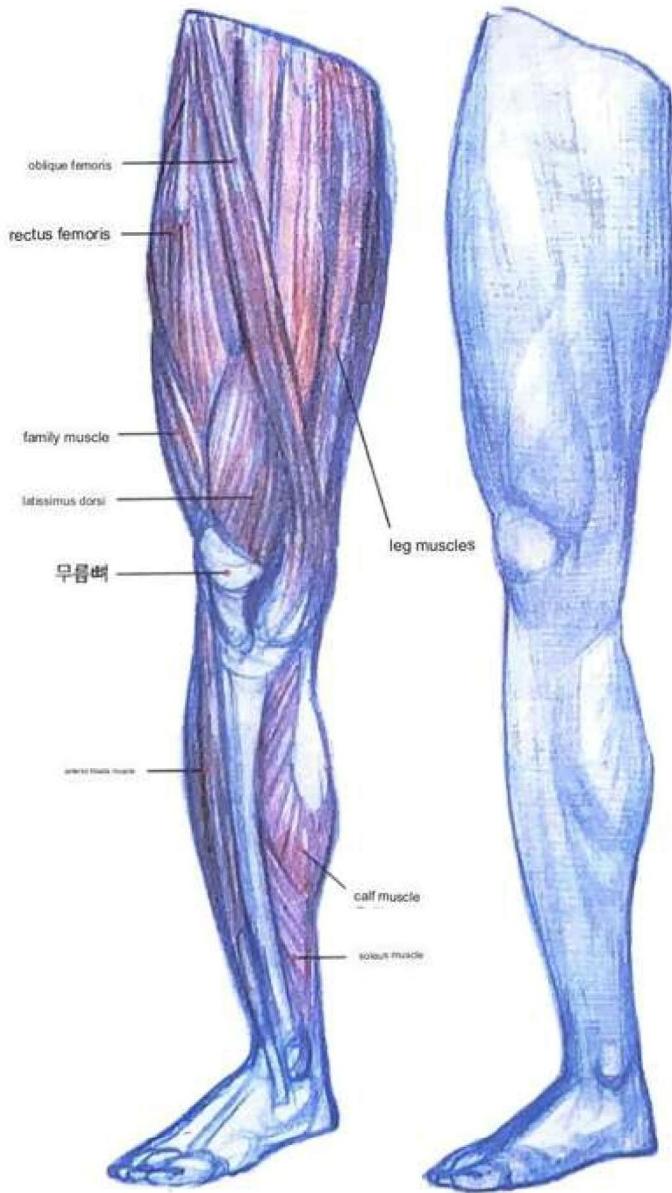
Evolve your form.

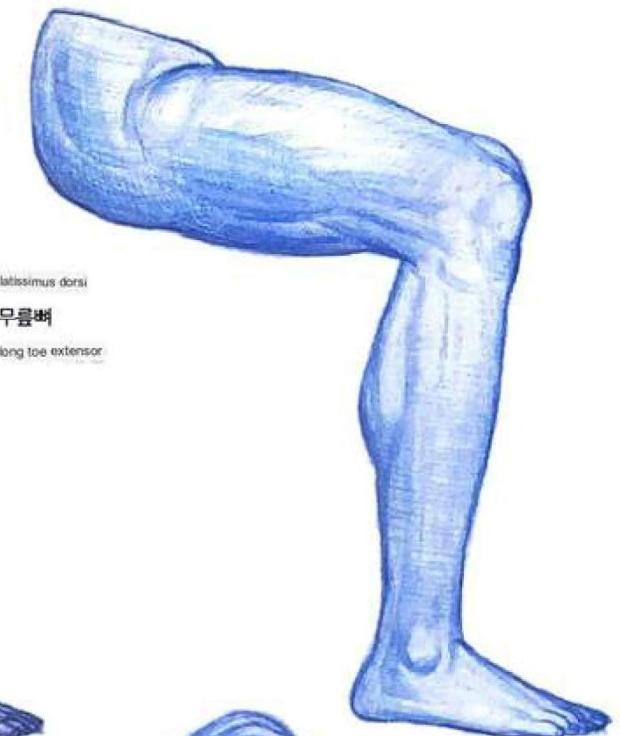
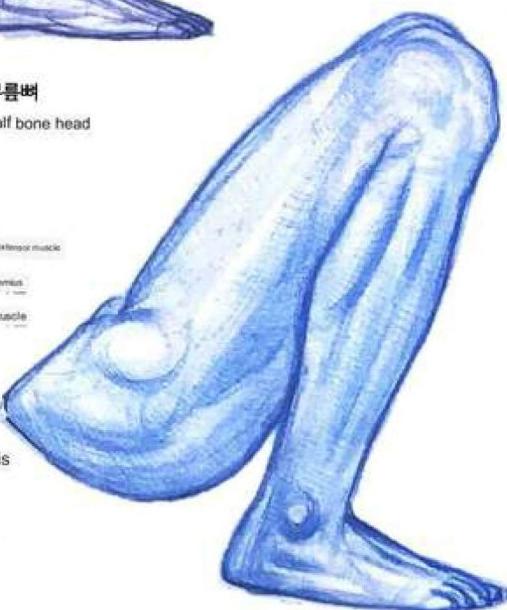
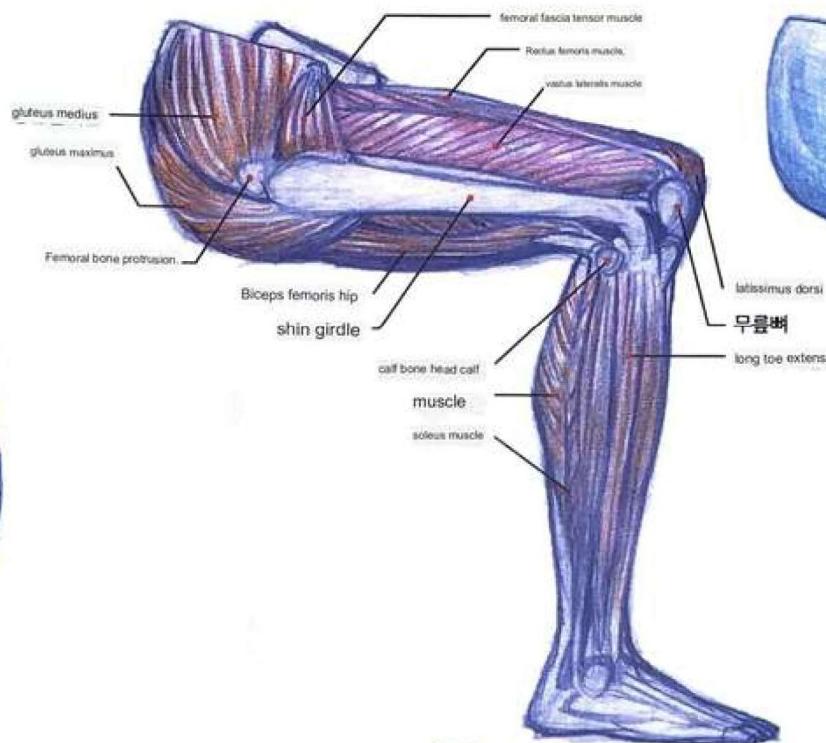
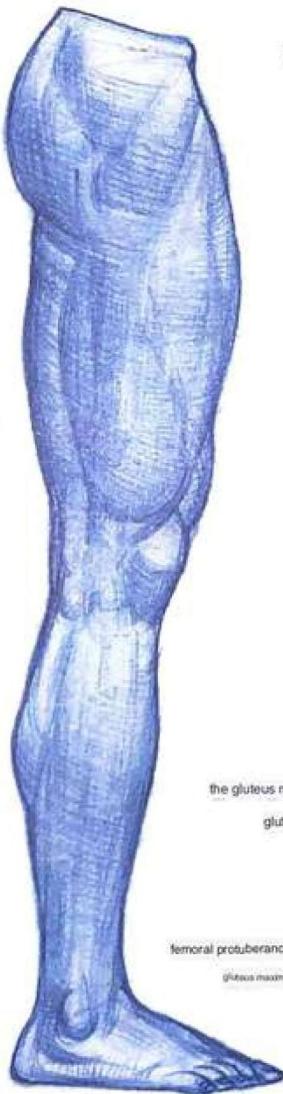
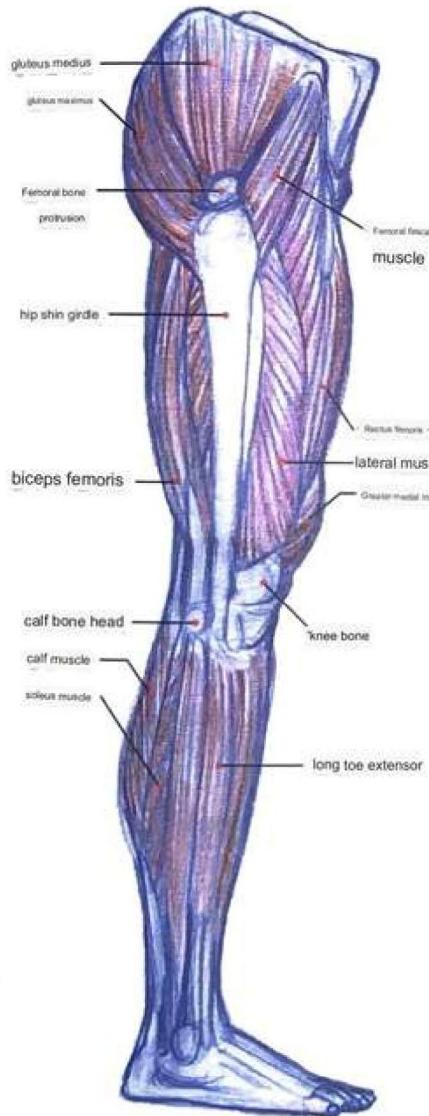


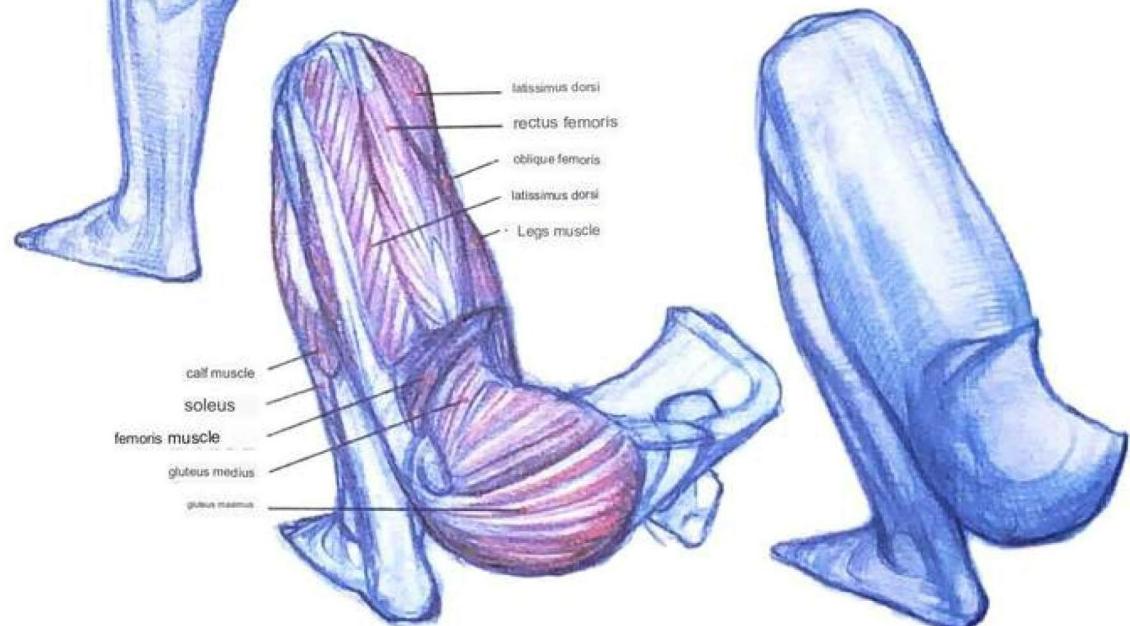
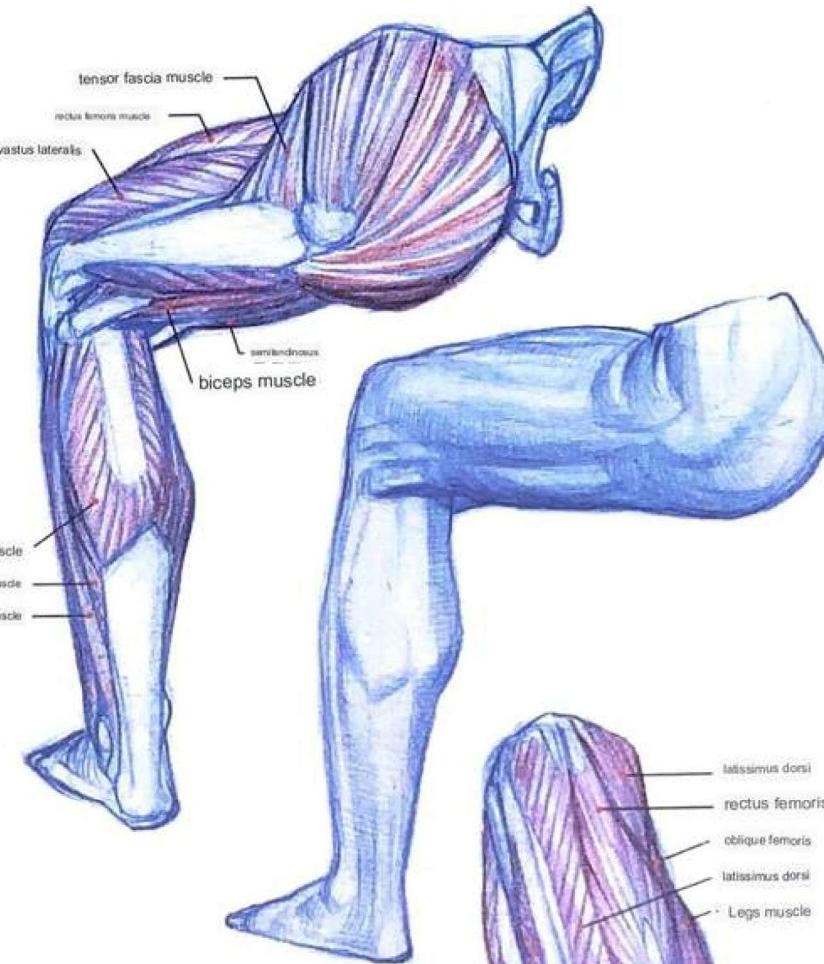
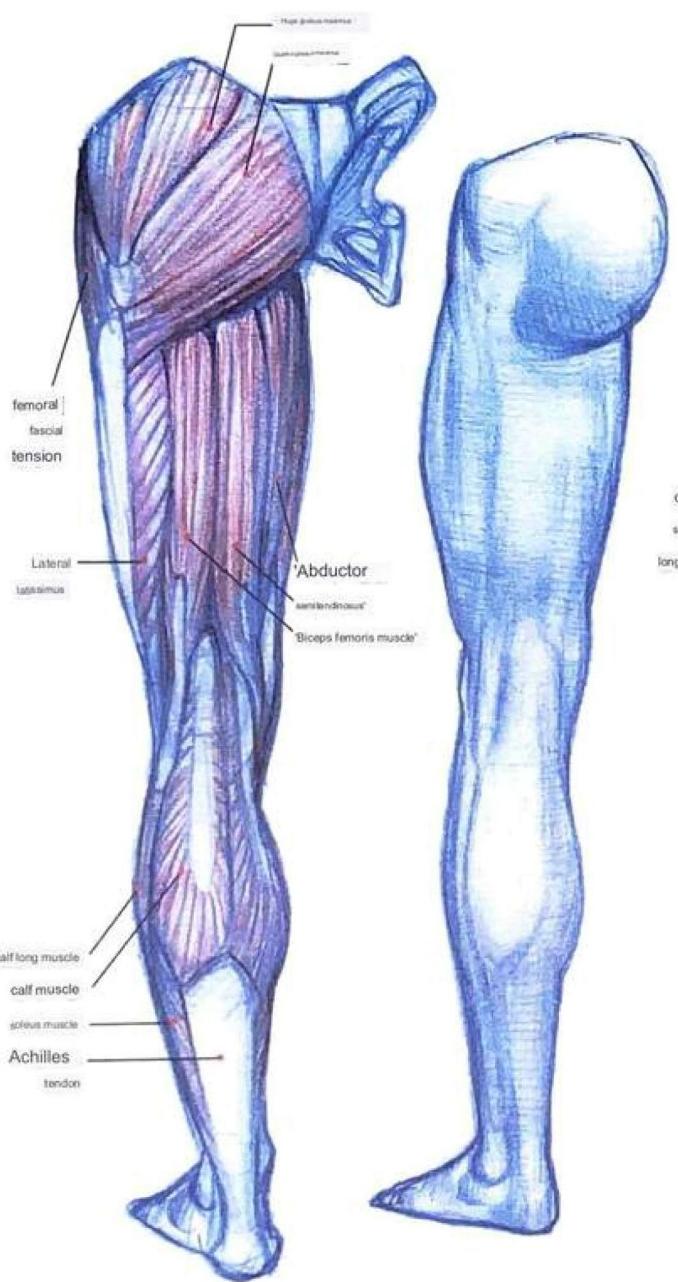
Let's apply what we learned earlier to draw feet from various angles.



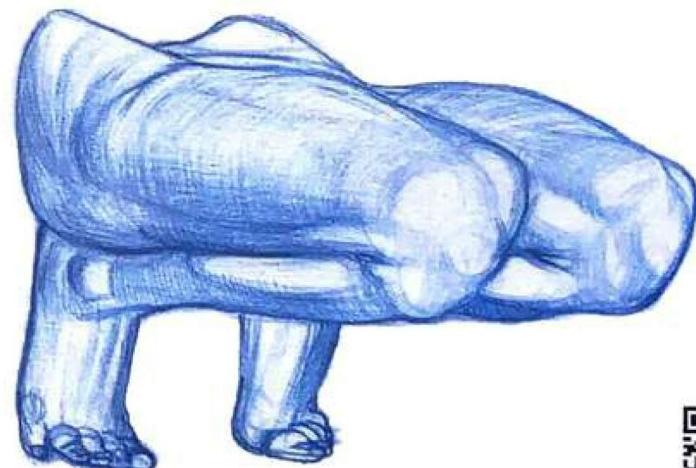
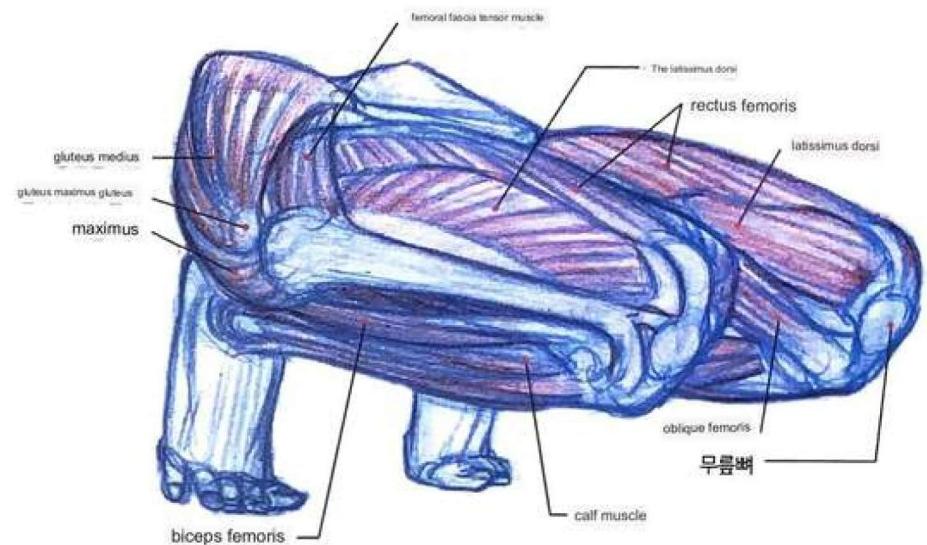
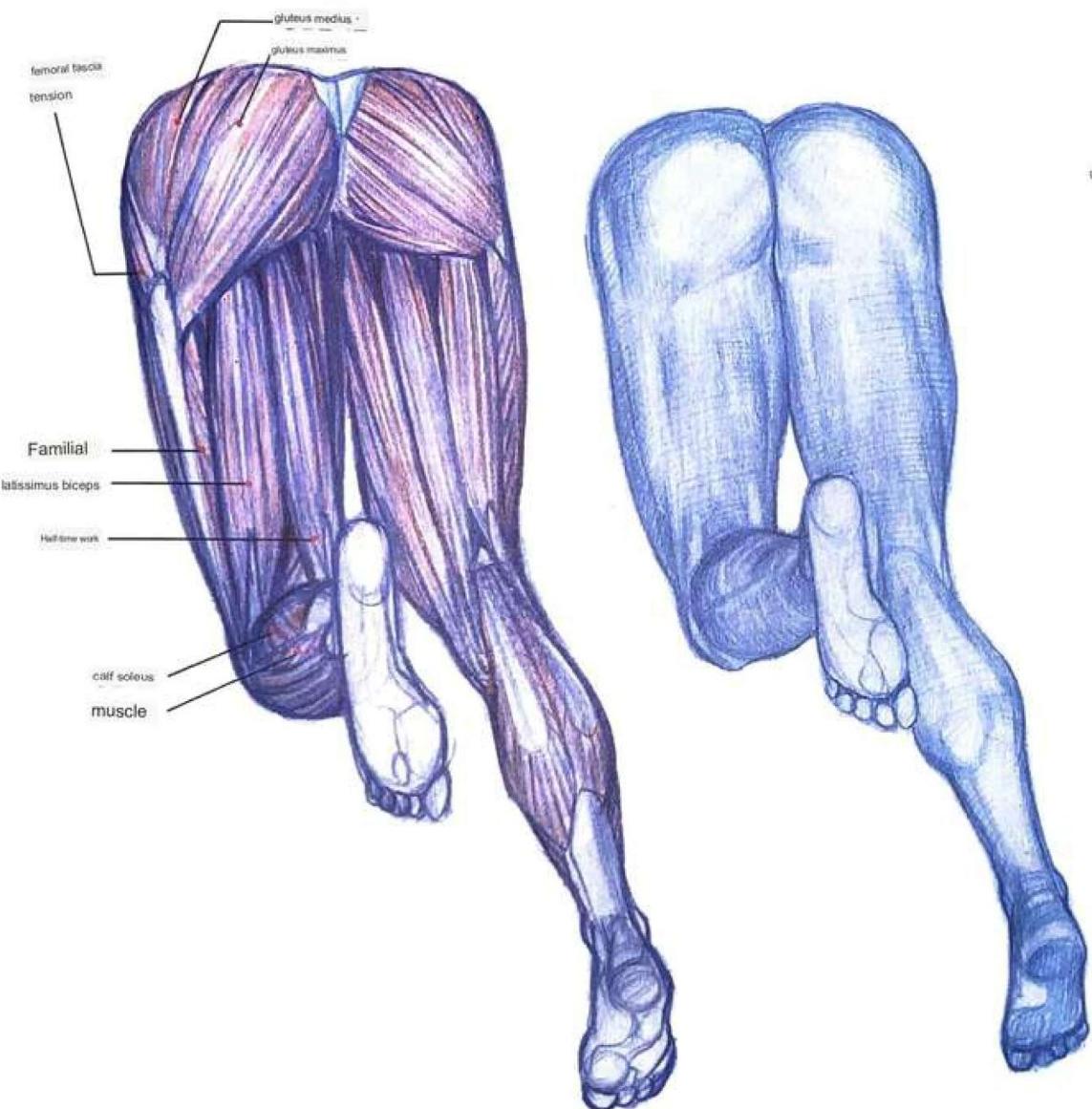
■ The flow of leg muscles viewed from various angles





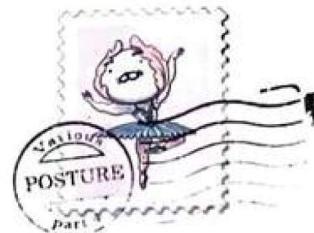


<Anna's eyes widen.>



## Collaboration of figure drawing and anatomy

After studying figure drawing and anatomy and being able to express the basic human body, it is now time to think about what kind of acting to make the character do. For example, if you are drawing a character sitting down, simply 'sitting down' is not only boring to draw, but also gives no special fun to the viewer. If you think about 'how' to sit according to the character's emotion or personality, the range of expressions will be enriched. You can tell a story in just one pose.



While many people find it enjoyable to set up the concept of a character like this, the next step is a bit of a headache. 'Where is the weight placed?', 'Is the movement of this joint in a natural state?' You have to be specific.

Adding this sense of realism gives the character life and persuasiveness.

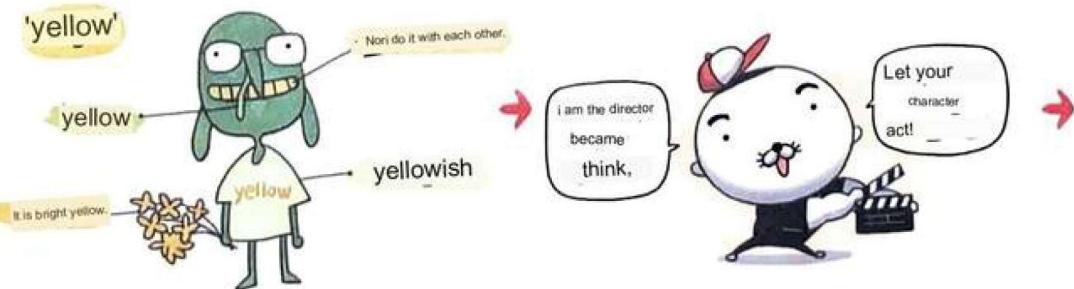
However, it is not as easy as you think when you try to apply what you have learned in theory to the posture you want to draw.

When I learned each one separately, I understood it, but when I tried to apply it in a comprehensive way, each piece of information was not connected and I drew as usual. In this chapter, we will find out how the theories learned above are actually applied through data drawn with figures, anatomy, and real-life male and female for each posture. In addition,

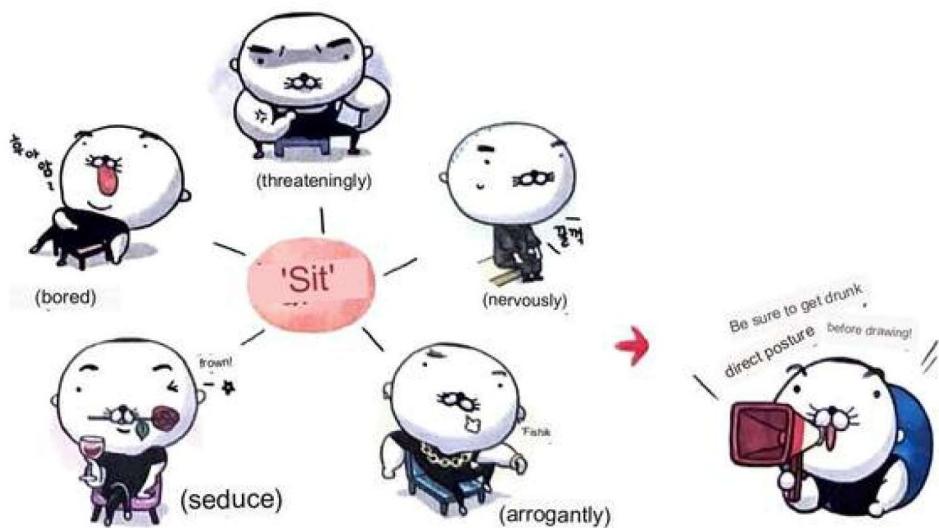
we will understand the form from various angles and study the characteristics of movement by examining each posture with various angles, continuous movements, and applied movements.



Just as there are many colors,



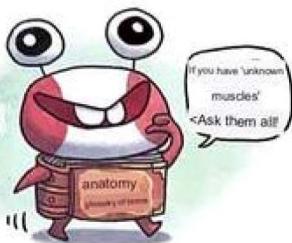
There are various emotions in posture.





Now it's  
a practice!

Tommyscene,  
a walking anatomy  
dictionary



Is it easy?



Just as knowing how to exercise doesn't build muscle, neither does drawing.

Because if you think  
you know, you don't practice

When you define 'knowing', it's not theoretical knowledge, but can you draw? don't you have It is better to judge by



Ego.  
Pop!

(really?)



From now on, I will only go all-in on practical skills.



Not so! Just like if you exercise in the wrong way, you will get hurt. Theory must be studied.

Now, let's learn how the theory is applied in actual drawing!

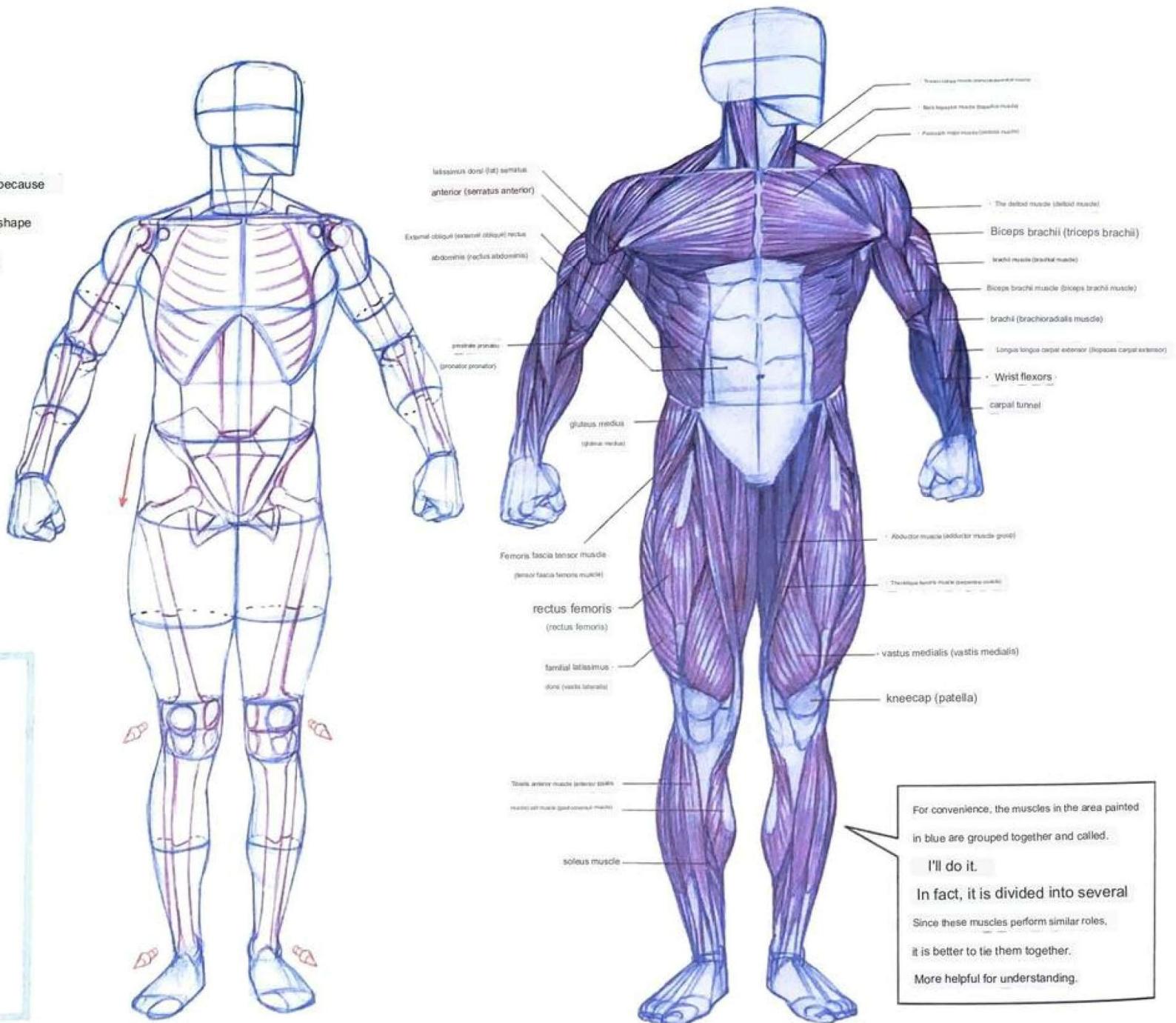
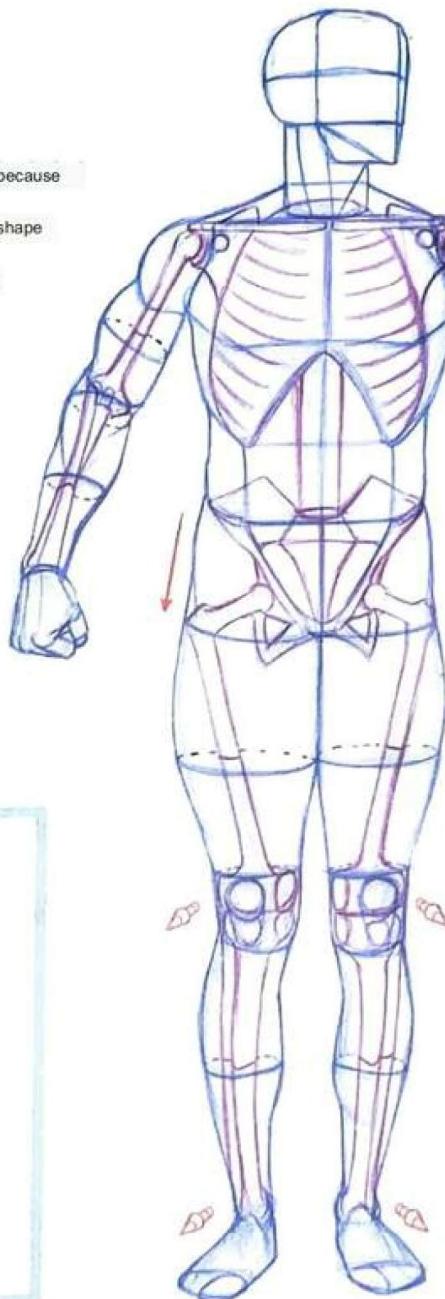


## 1 Basic and applied posture

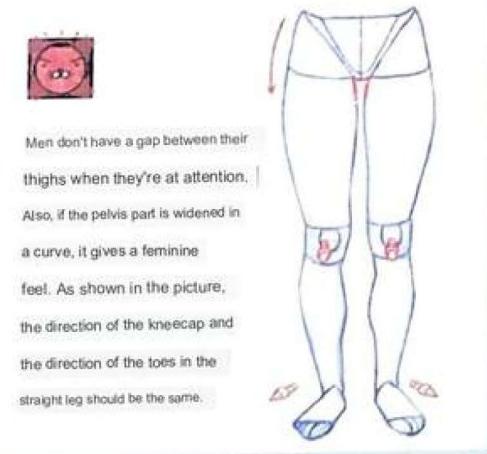
### ■ Frontal standing posture

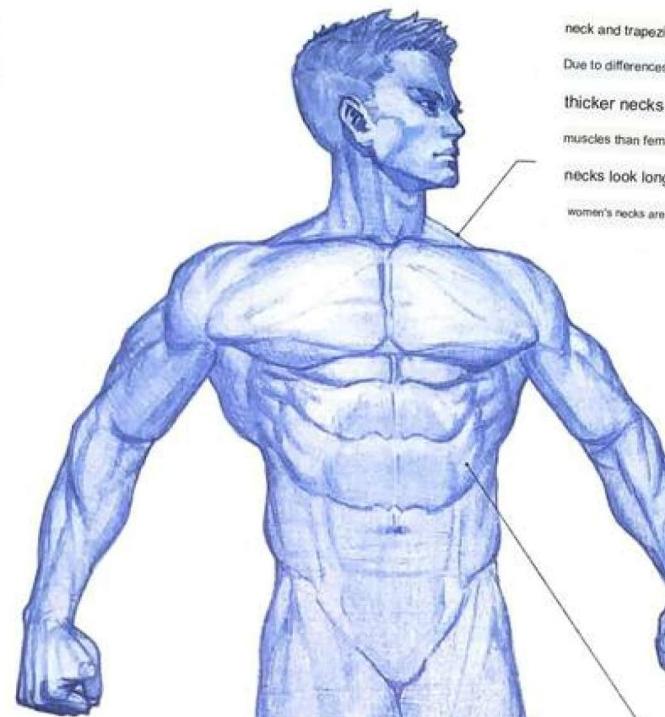
#### The importance of figuration

Even though it is the most basic posture, it is difficult to draw because the frontal standing posture requires accurate inclination and shape symmetry. It is difficult to create a three-dimensional effect because the side is not visible. After drawing the skeleton while checking the proportion, center of gravity, and natural movement, apply a simple flow figure on the skeleton to understand the sense of volume.

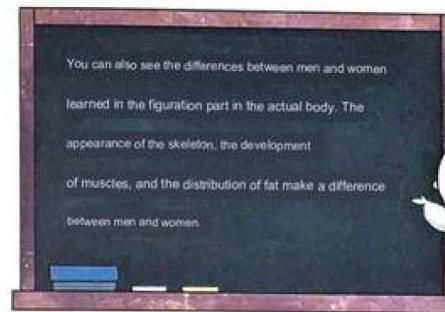
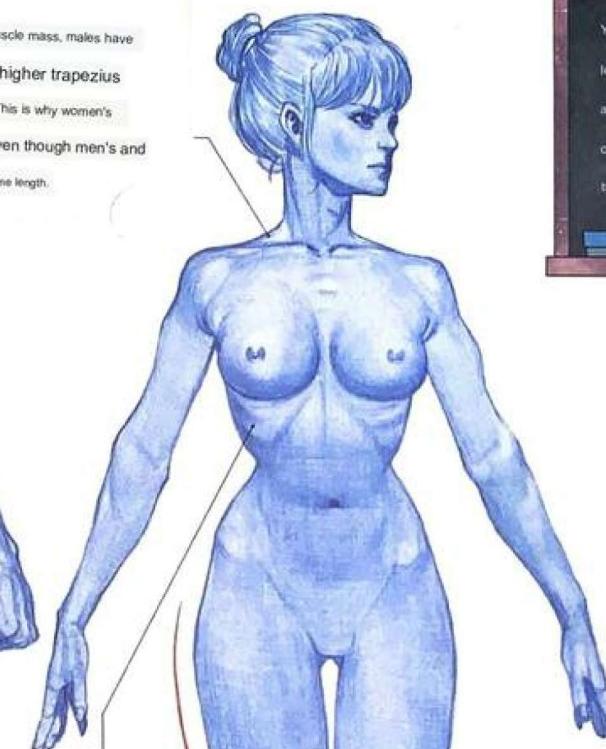


#### Orc male lower body drawing





neck and trapezius  
Due to differences in muscle mass, males have thicker necks and higher trapezius muscles than females. This is why women's necks look longer even though men's and women's necks are the same length.



How to check if the white angle of the leg bone is 'right'

From the head of the femur

to the kneecap and ankle

If the joints that would have angle within the line

been drawn in a straight line

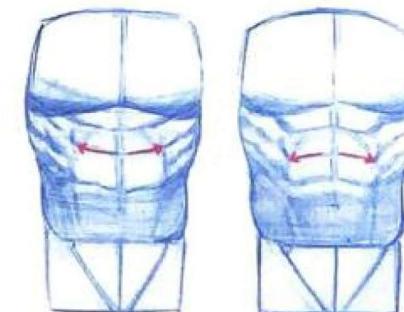
are located, the degree of whiteness of the bones is appropriate. This method

can be applied at any angle as long as the knee is not bent.



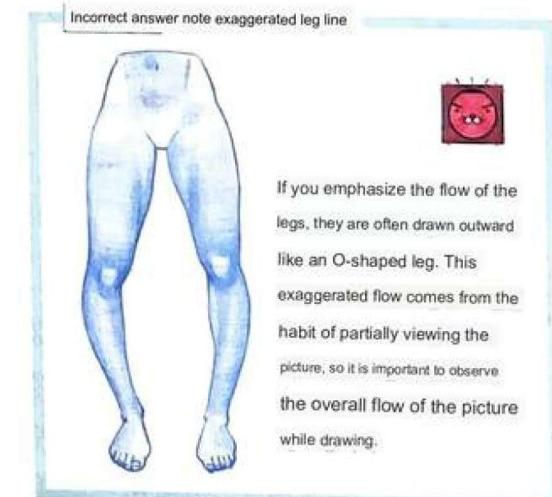
Differences  
in the volume and muscle mass of the torso ribs create the characteristic silhouettes of male and female torsos.

The flow of the lower body of men and women seen from the front. In men, the vastus lateralis muscle stands out the most, and it changes from tendon to tendon toward the knee, rapidly reducing the sense of volume. In women, the flow of soft curves is connected to the knees, centering on the pelvic area where fat is accumulated due to the influence of female hormones.



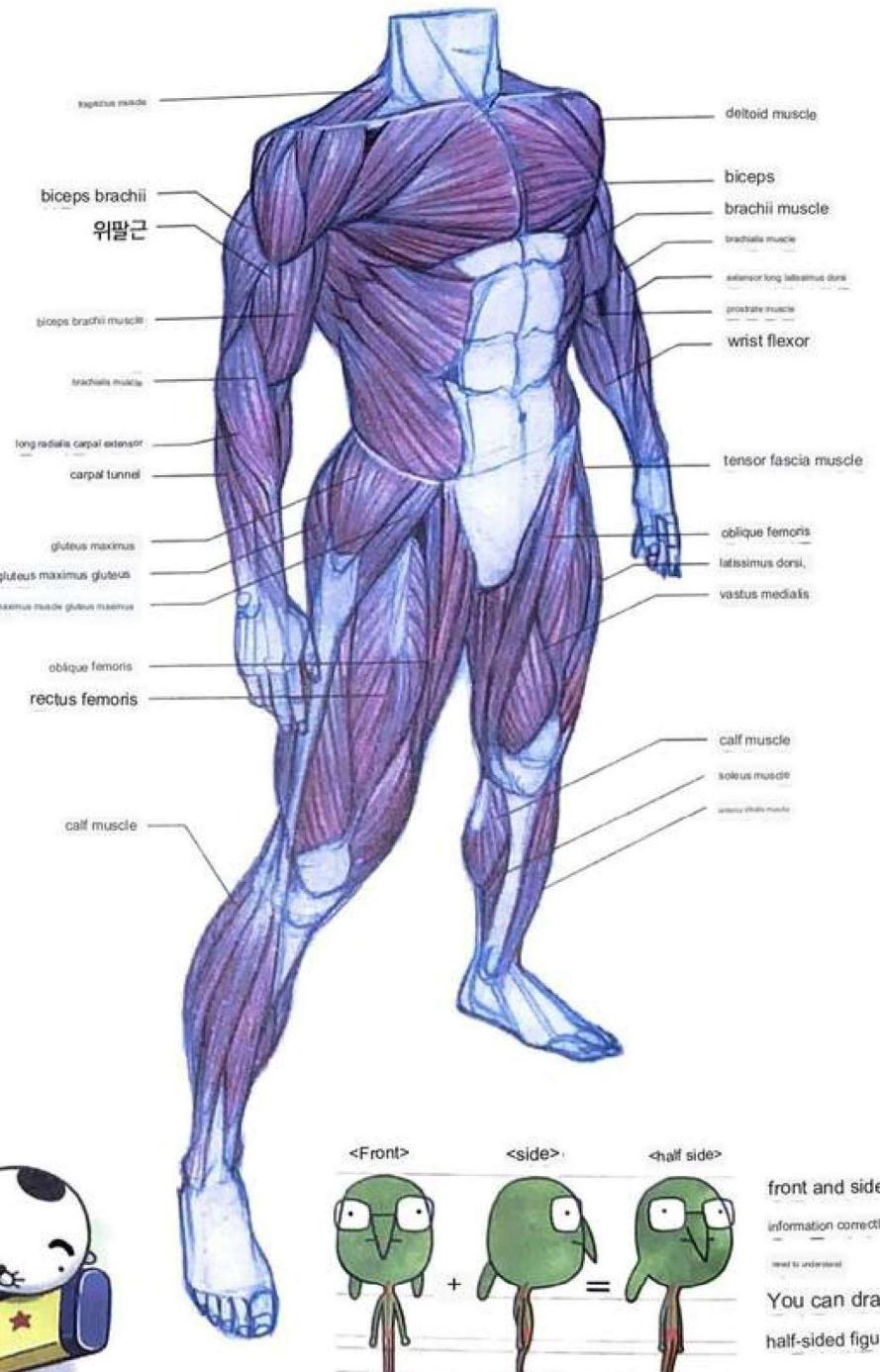
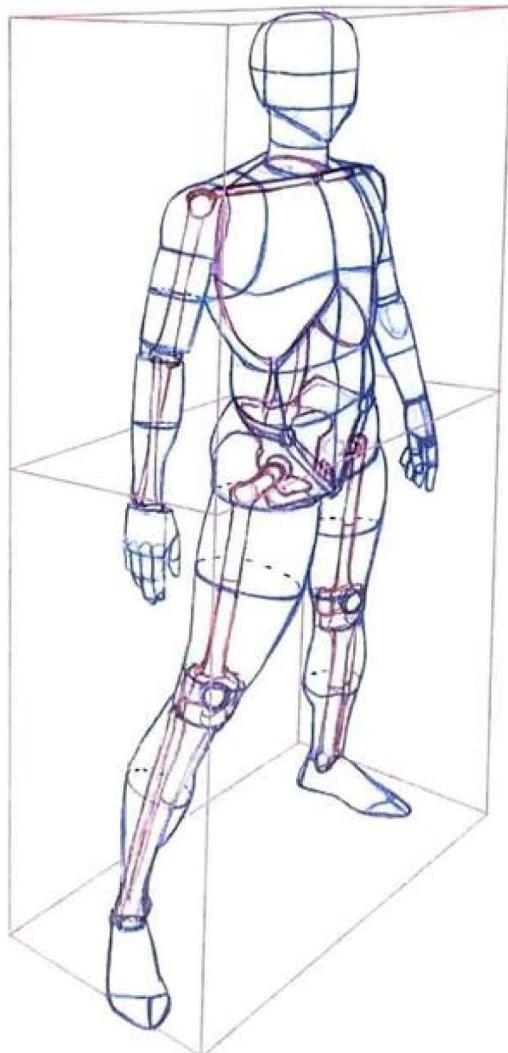
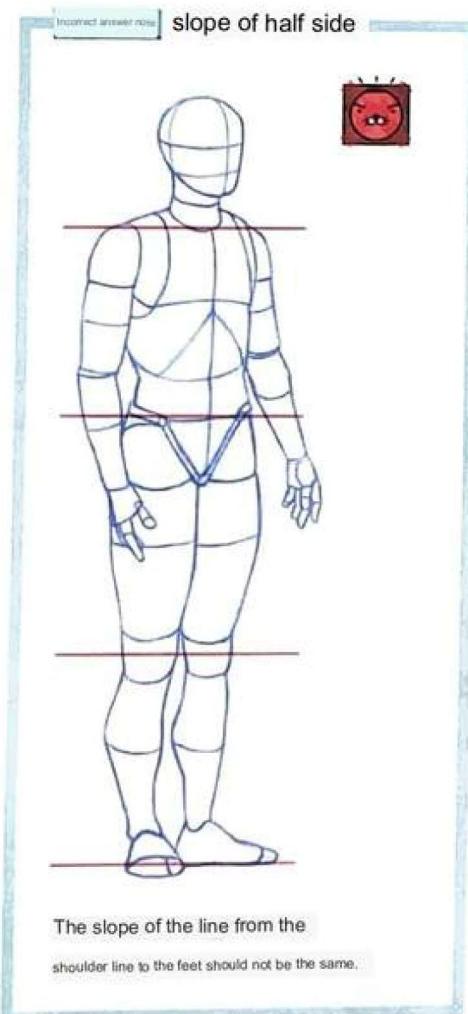
Various shapes of the rectus abdominis muscle

The shape of the rectus abdominis differs from person to person, there is.



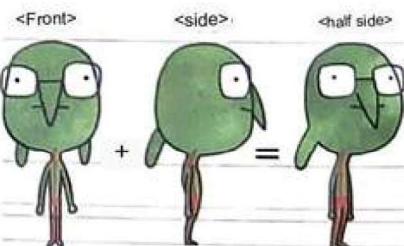
If you emphasize the flow of the legs, they are often drawn outward like an O-shaped leg. This exaggerated flow comes from the habit of partially viewing the picture, so it is important to observe the overall flow of the picture while drawing.

## ■ Half-side standing posture

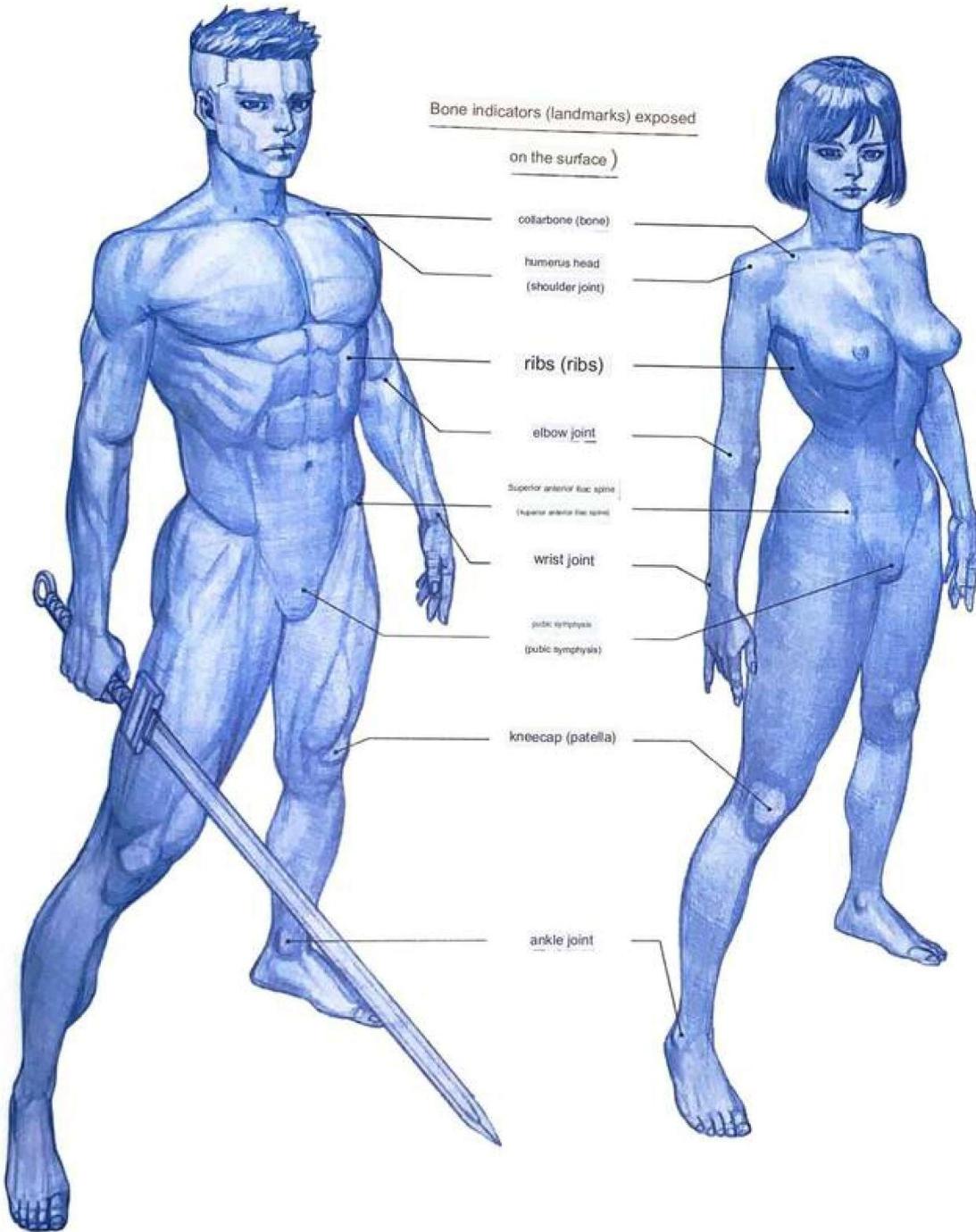


Draw a character that fits the space

The slope of the horizontal line of the body becomes steeper the further away from eye level. Even if you draw the proportions and shapes of the human body correctly, if the viewpoint and center of gravity are wrong, it will look unstable and result in a flat picture. You can draw a three-dimensional character more easily by setting the eye level first, drawing a hexahedron suitable for it, and then drawing a person inside the hexahedron. Before drawing a character, make a space first!



front and side  
information correctly  
used to understand  
You can draw  
half-sided figures.



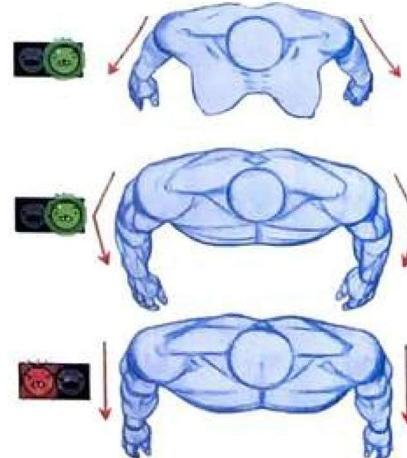
#### human body flow in hemilateral view

As we learned in Chapter 1, the flow of the human body in the full side is not vertical, but curved, and the lower body also falls backward to balance the leaned upper body. This feature is more evident at the rear angle, where the curvature of the spine is visible. The reason why it is difficult to draw a natural standing posture is that the curved flow of the whole body and the tilt that changes according to the perspective must be applied at the same time.

Draw the character at half-side angle by default  
It is almost memorized by game artists  
It's a familiar posture to practice.

#### Incorrect note Flow of male and female arms

standing with both arms relaxed  
In this state, women's arms are bent outward,  
and men's arms are bent inward. This  
O-shaped flow of the male arm is  
particularly difficult to express from the half-lateral angle. As shown in the bottom picture,  
there are many mistakes in drawing  
the half side by thinking of the arm as the  
shape of the letter 11, so be careful.

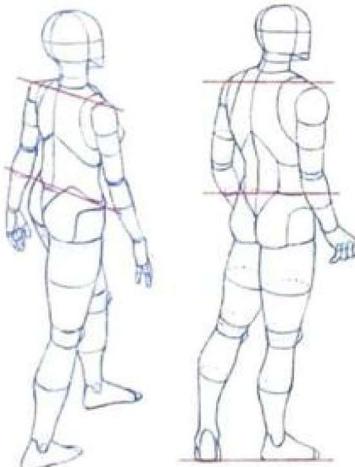


■ Basic half-side posture viewed from the back

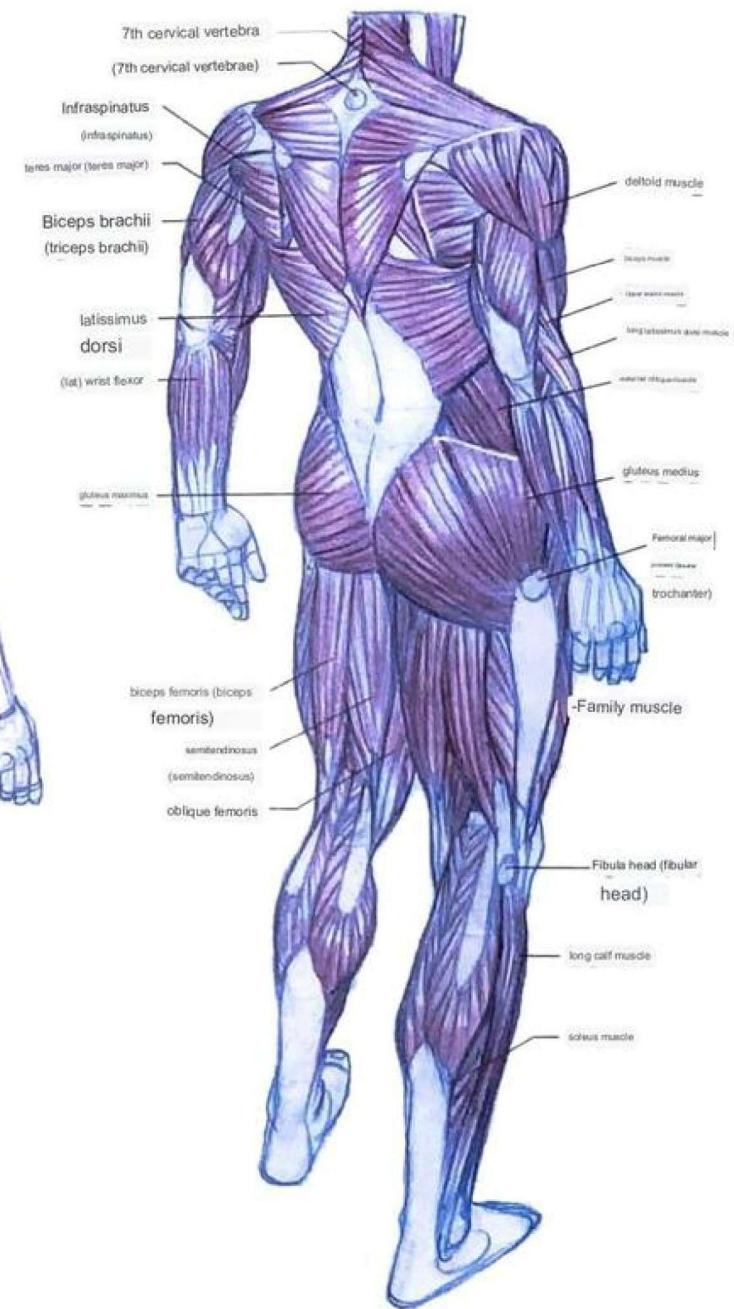
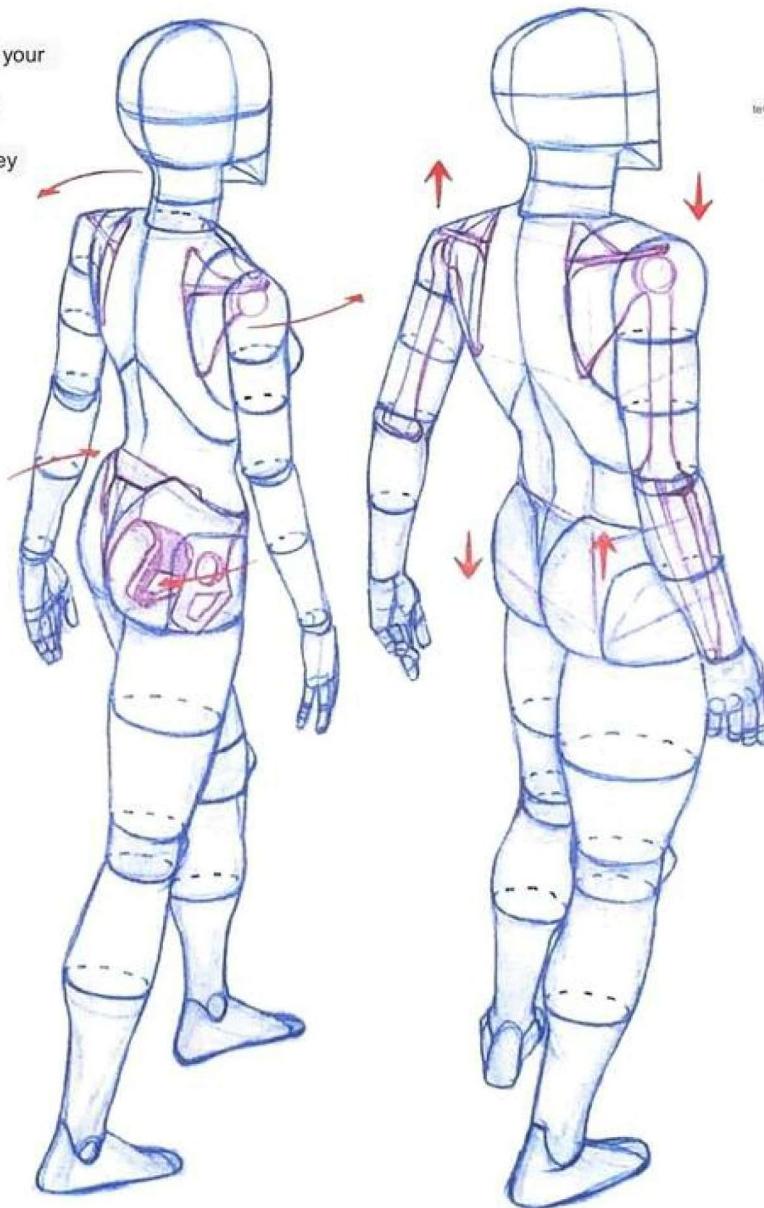
Hemilateral view from the back, male and female flow differences

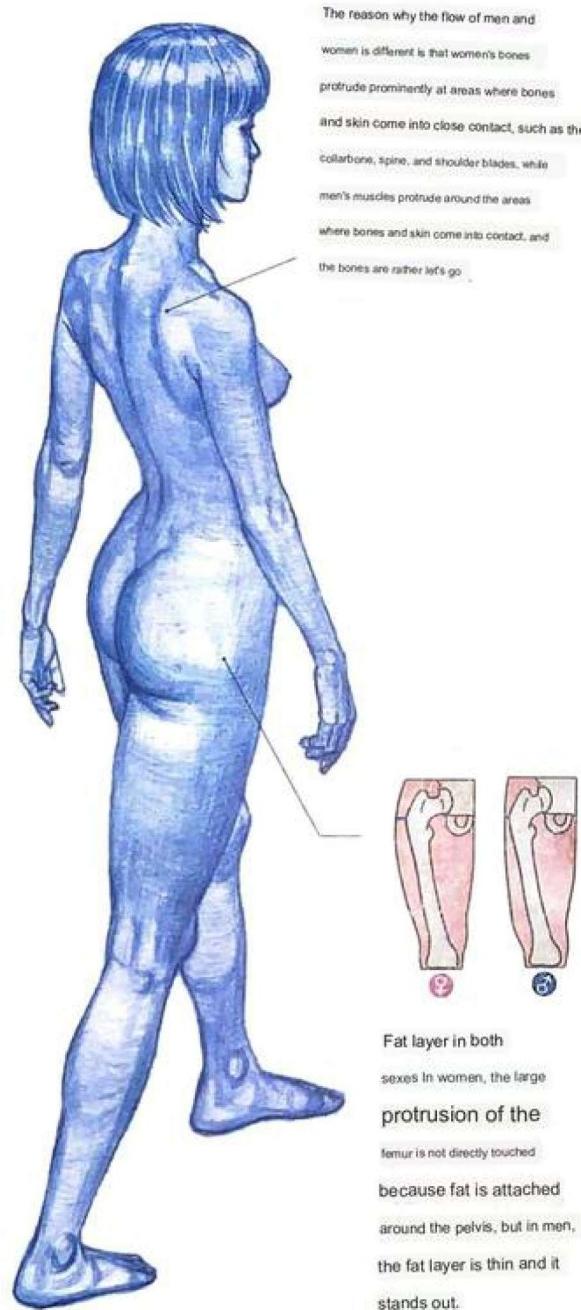
Unlike standing still, when you walk or cross-legged, the tilt of your pelvis and shoulders changes. When walking, the shoulders and pelvis cross back and forth, and when standing on one leg, they cross up and down. The shoulders are fixed, but the overall flow should be in line with the movement, rather than drawing only a partial pose, such as with only the feet on one leg. The reason why the whole body reacts to a slight movement is to adjust the center of gravity.

Mistakes When Drawing Grant's Basic Pose



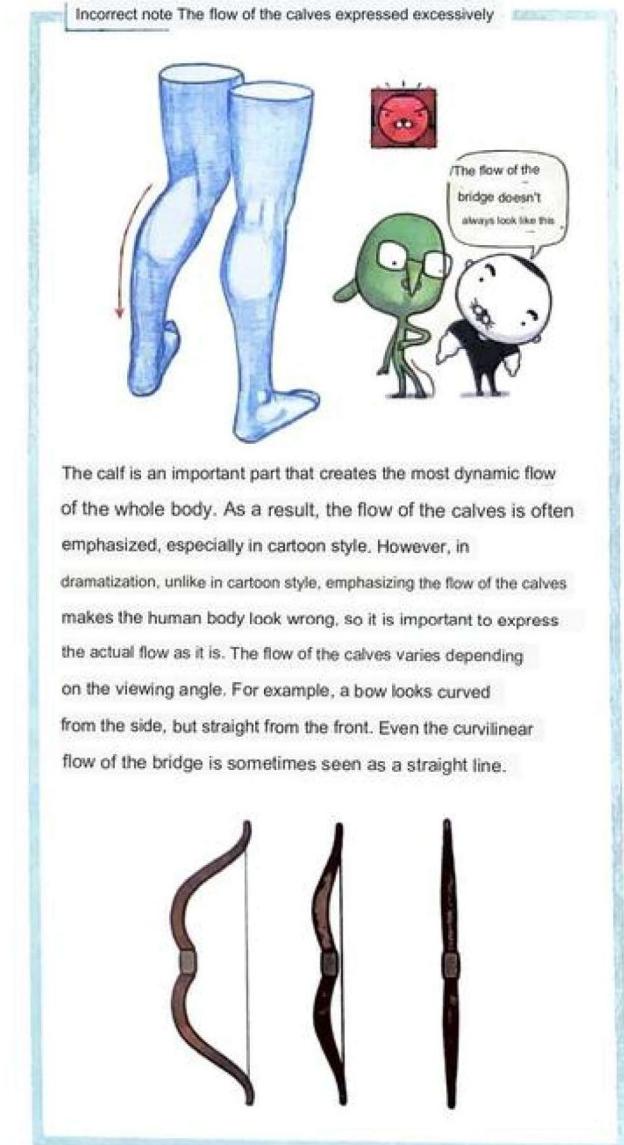
- Adjust the shoulder tilt, pelvis tilt, and foot position to the same tilt. When drawing parallel or all horizontally ②
- When drawing feet to the side regardless of eye level •
- When drawing the waist in a straight line





## Shape with muscle flow

When drawing men, the flow of muscles is added differently from women. Do not describe the muscles realistically from the beginning, but first create a figure of the muscles as shown in the picture below.



Posture that emphasizes the back



\* The tendon area is narrow and the tendon is wide.



\* The tendons are wide and the tendons are narrow.

#### Differences in muscle appearance

Just as each person has a different face and body shape, there is a slight difference in the ratio of tendons to tendons in muscles. So, after studying the position of the muscles, look at the photos of various models, identify the differences, and decide the body type you prefer. If you study only one material, you will have difficulty studying muscles because it is not compatible or applied with many other model photos.

#### broadest muscle, latissimus dorsi

The latissimus dorsi is the largest muscle in our body. There are still traces of evolution from apes that lived hanging from trees. The latissimus dorsi muscle has the greatest difference in muscle mass before and after exercise compared to other muscles. Since the arms are spread out wide when they are spread out to

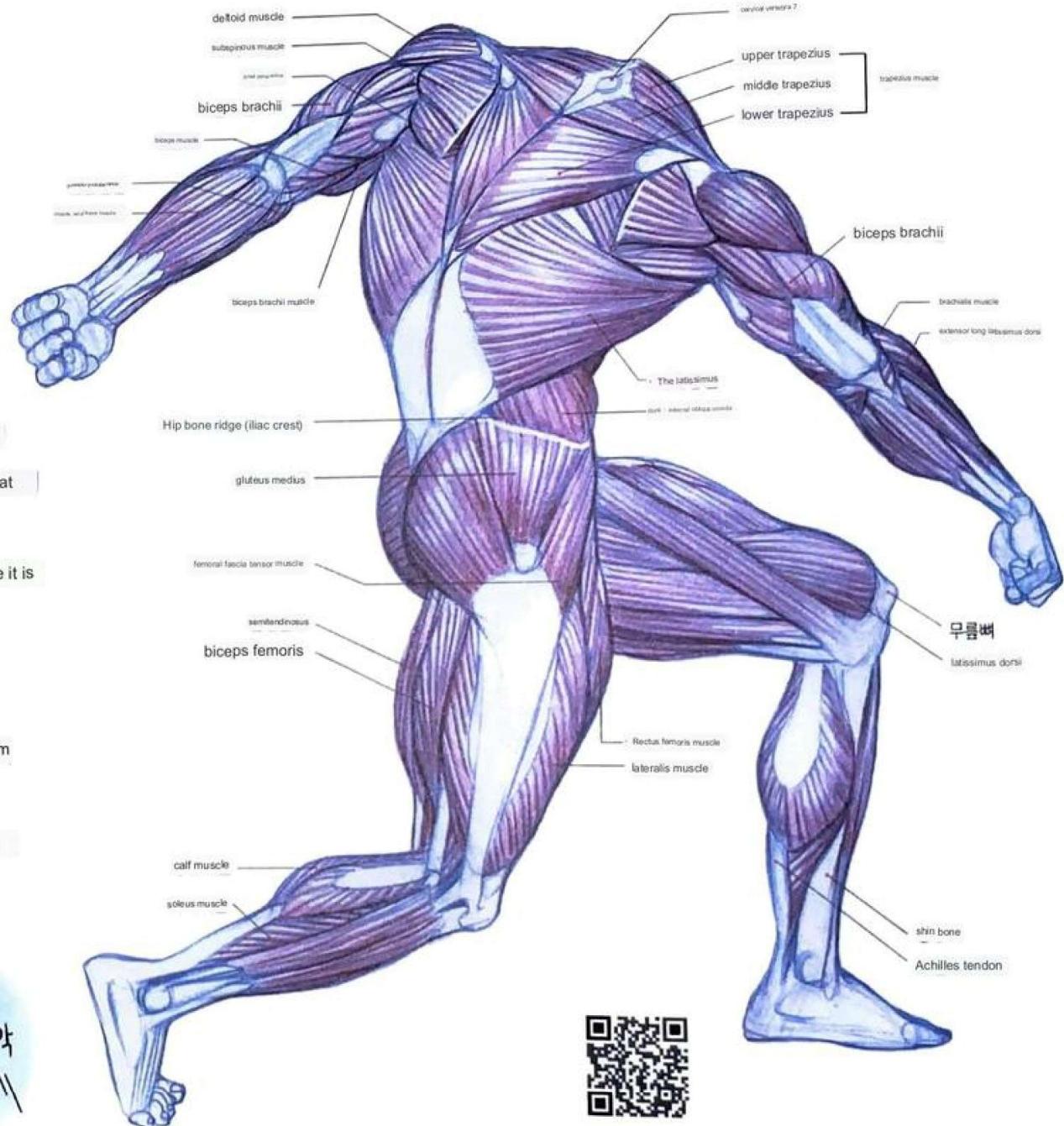
the side, fitness trainers use wide rounds.

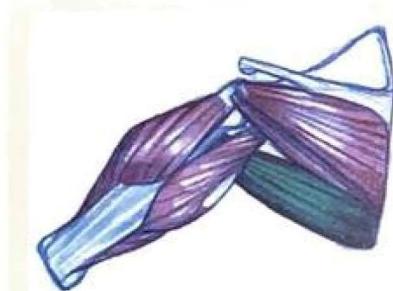
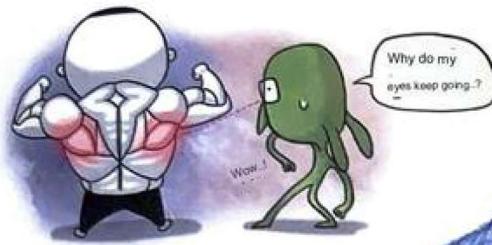
on the wings of a flying squirrel



I can even compare it.

The swollen shape resembles the wings of a ladybug.





prominent farsightedness

Unlike other flat back muscles, the teres major muscle has a round cross section, so when it contracts, it protrudes convexly, making it easy to see even when it is small.

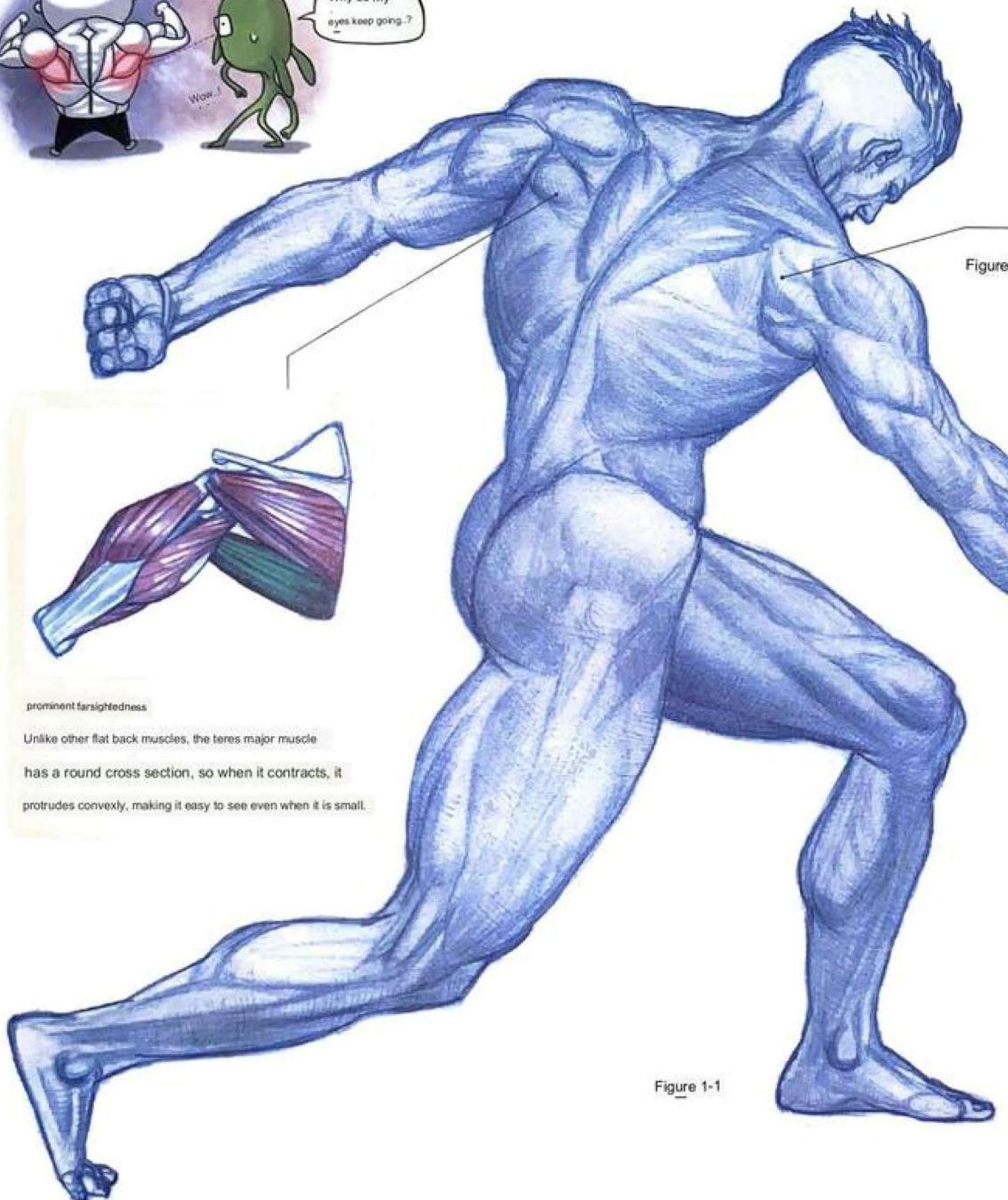


Figure 1-1

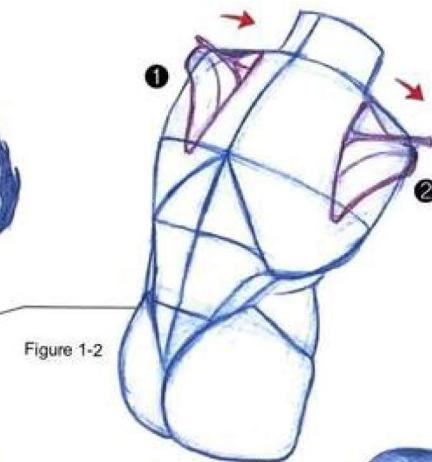


Figure 1-2

## position of the shoulder blade

As shown in Figure 1-1, the position of the shoulder blade in the posture of pulling both arms to the right is as shown in Figure 1-2. The 4th shoulder blade is pulled inward due to the contraction of the trapezius muscle, and the 2nd shoulder blade is pulled outward due to the contraction of the large chest located in the front of the body.



Figure 2-1

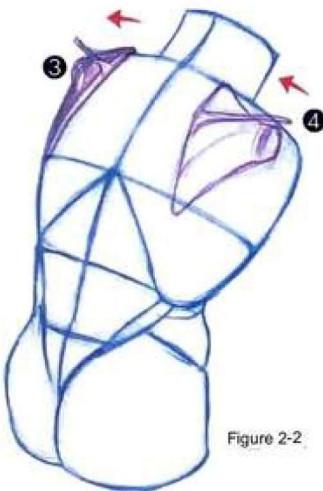


Figure 2-2

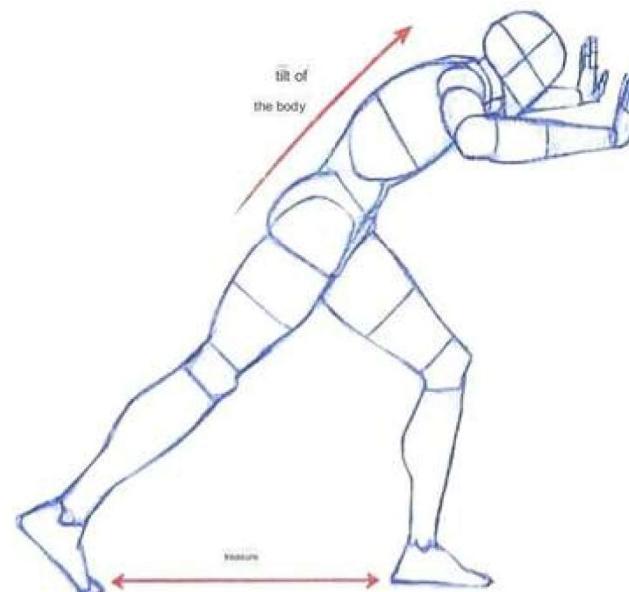
## Changes in appearance due to muscle contraction and relaxation

Figure 2-1 and Figure 2-2 show the posture of pulling the arm to the left, opposite to the 1st and 2nd shoulder blades. The 2nd shoulder blade is pulled outward by the contraction of the pectoralis major muscle, and the 4th shoulder blade is pulled inward by the contraction of the trapezius muscle. When you change your posture like this, you can see the muscles used and the appearance change. When the muscle contracts, it rises thickly and the boundary between the muscles becomes clear, and when the muscle is relaxed, the thickness of the muscle becomes flat. Therefore, you need to know which muscles are used when taking a posture so that you can draw the appropriate muscles and appearance.

## ■ Pushing posture

side view

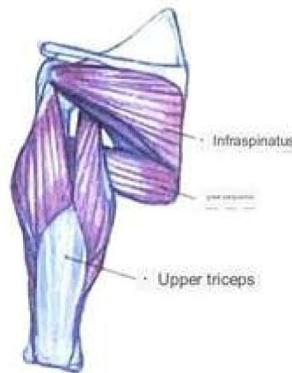
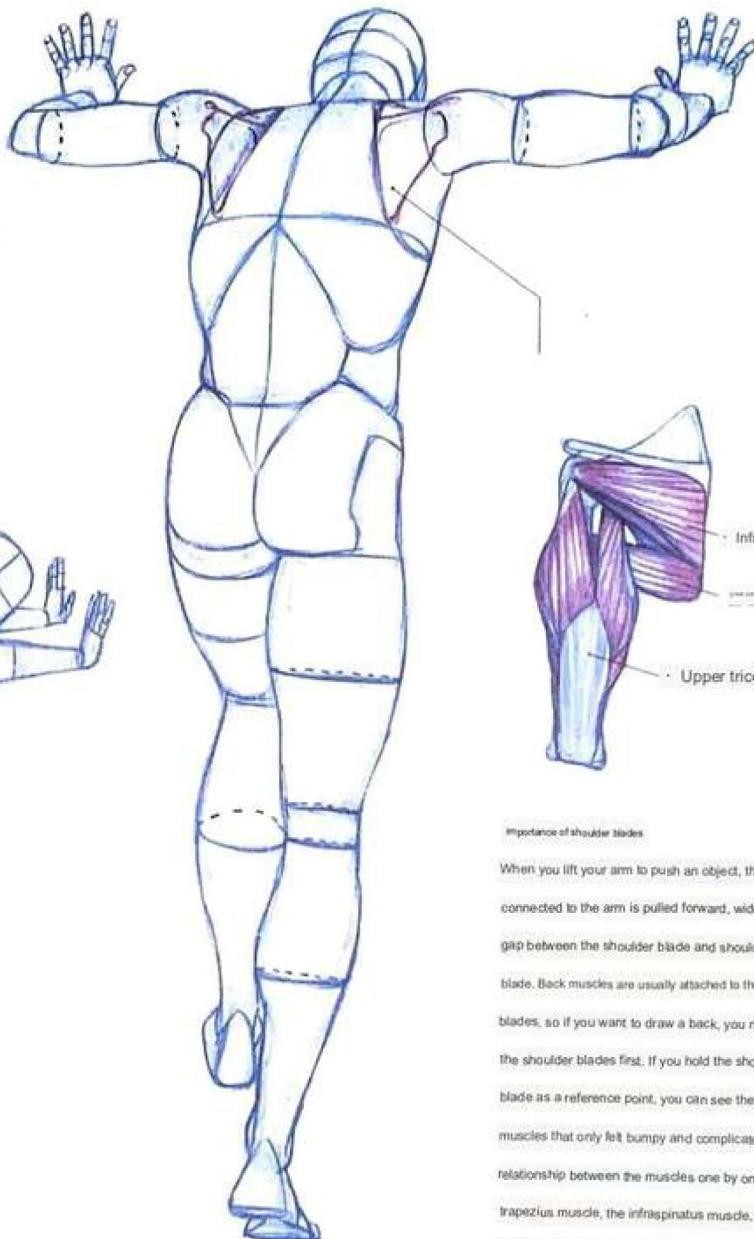
If you look at the picture on the right, the person's back or how much you've spread your legs. If you look at the same posture from the side (picture below), you can get a lot of information, such as the inclination of the torso and the width of the stride.



How to know the tilt of your body

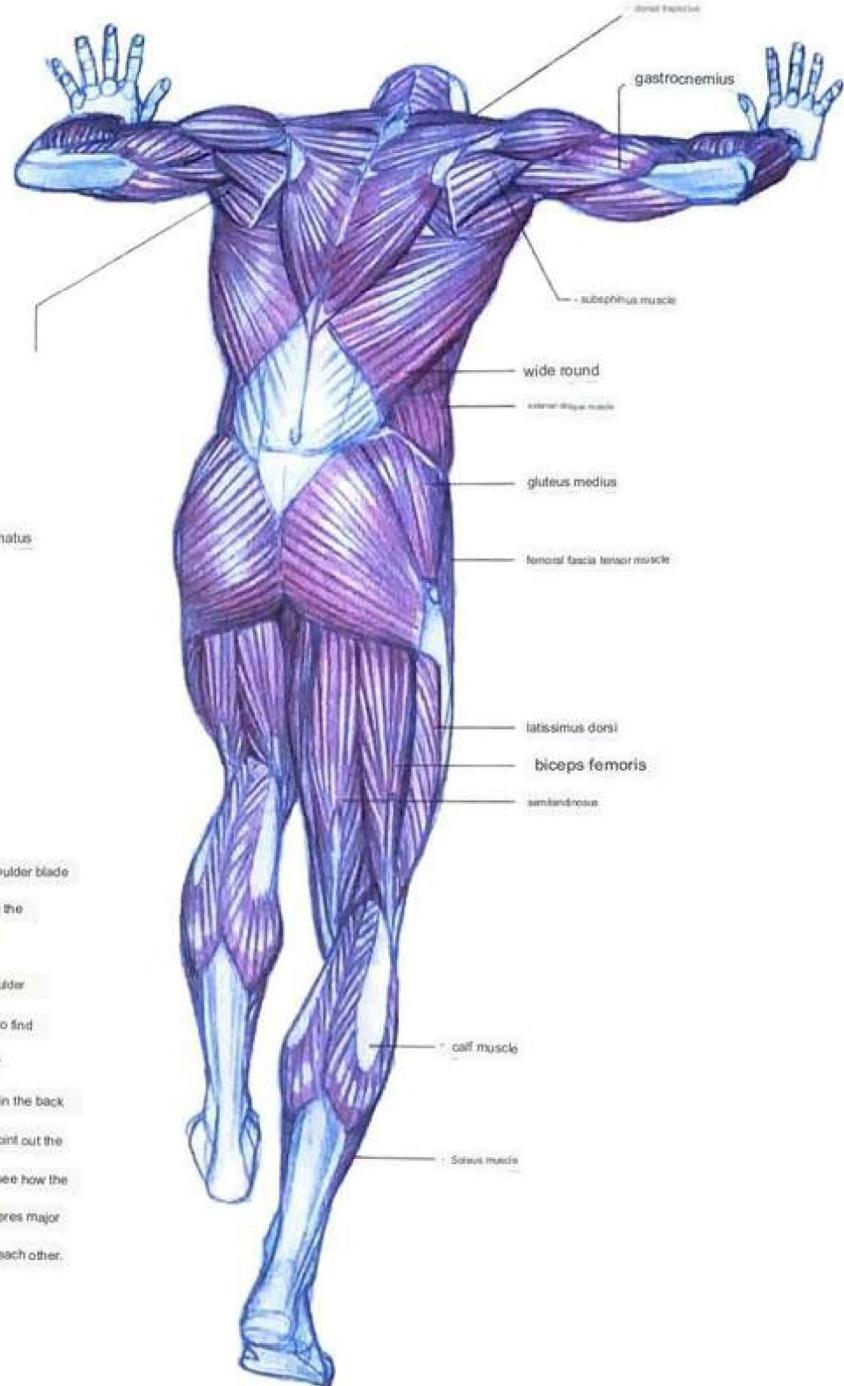
When envisioning a pose, draw it from a full side angle.

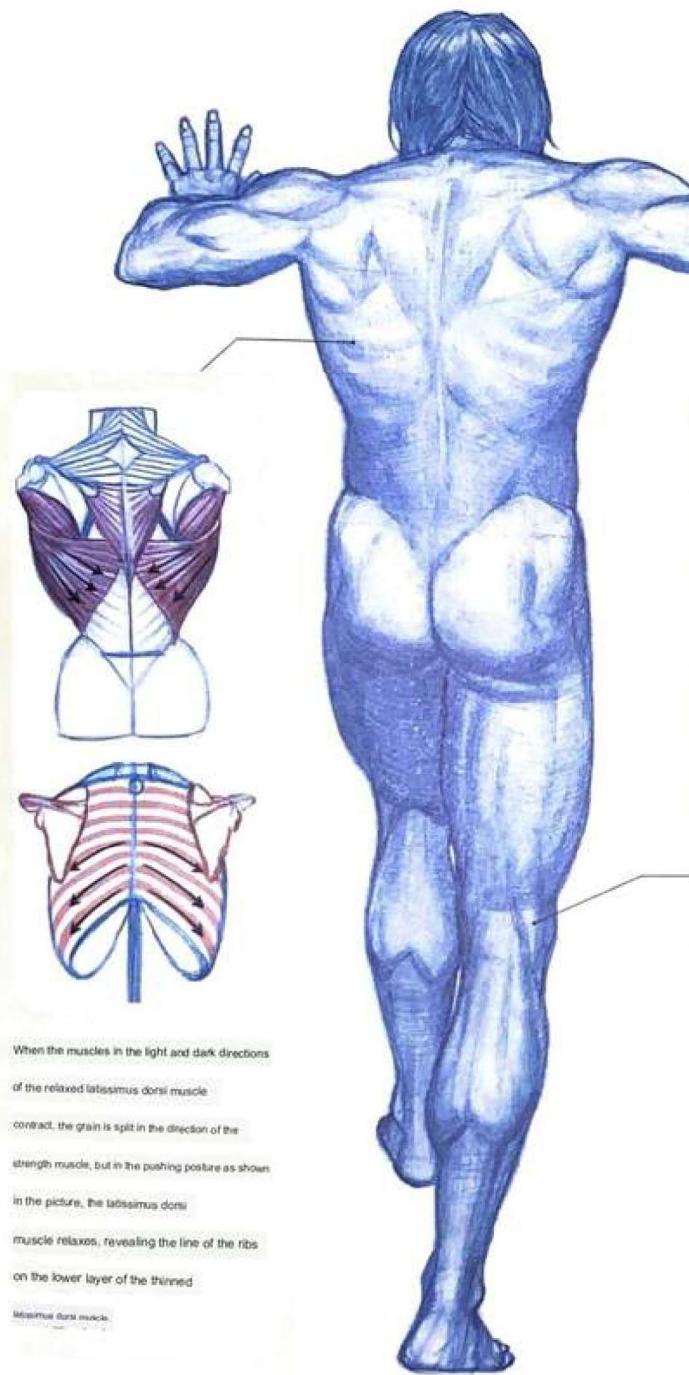
You can see the exact tilt of the body.



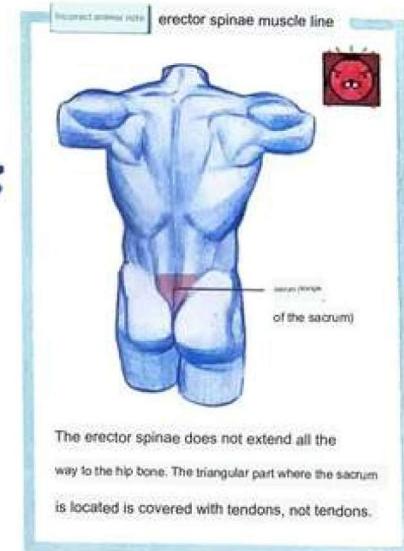
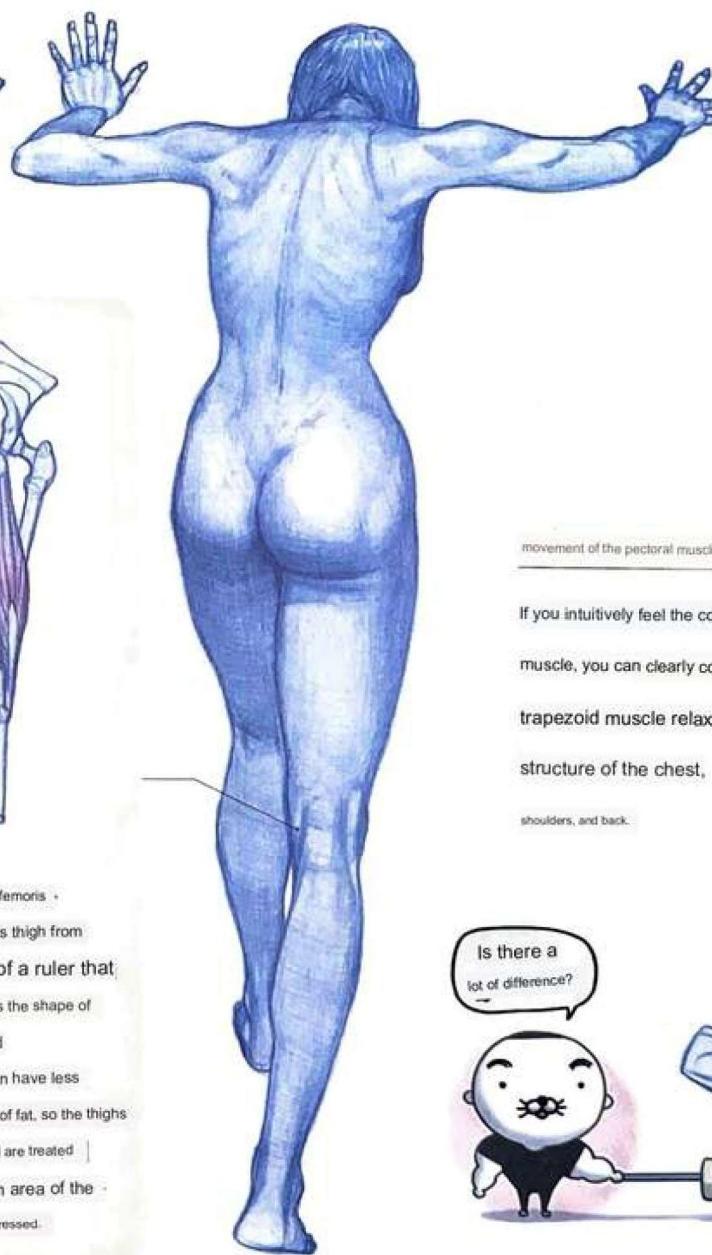
### Importance of shoulder blades

When you lift your arm to push an object, the shoulder blade connected to the arm is pulled forward, widening the gap between the shoulder blade and shoulder blade. Back muscles are usually attached to the shoulder blades, so if you want to draw a back, you need to find the shoulder blades first. If you hold the shoulder blade as a reference point, you can see the flow in the back muscles that only felt bumpy and complicated. Point out the relationship between the muscles one by one to see how the trapezius muscle, the infraspinatus muscle, the teres major muscle, and the latissimus dorsi muscle overlap each other.





**Appearance of the biceps femoris .**  
When looking at a man's thigh from the back, the flow of a ruler that looks like two branches is the shape of the biceps femoris and semitendinosus. Women have less muscle and a thick layer of fat, so the thighs do not depict muscles and are treated gently, but the tendon area of the biceps muscle must be expressed.

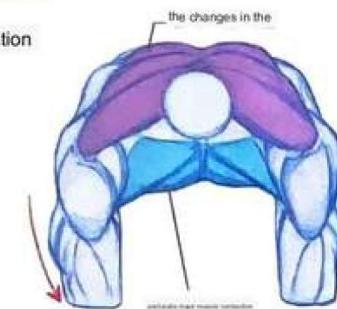


#### movement of the pectoral muscle

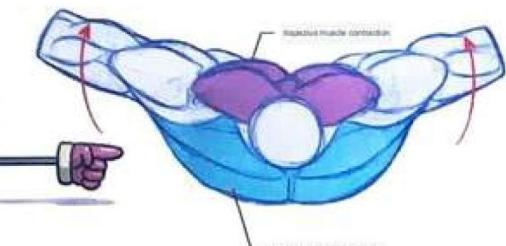
If you intuitively feel the contraction and relaxation of the pectoralis major muscle, you can clearly compare

#### trapezoid muscle relaxation

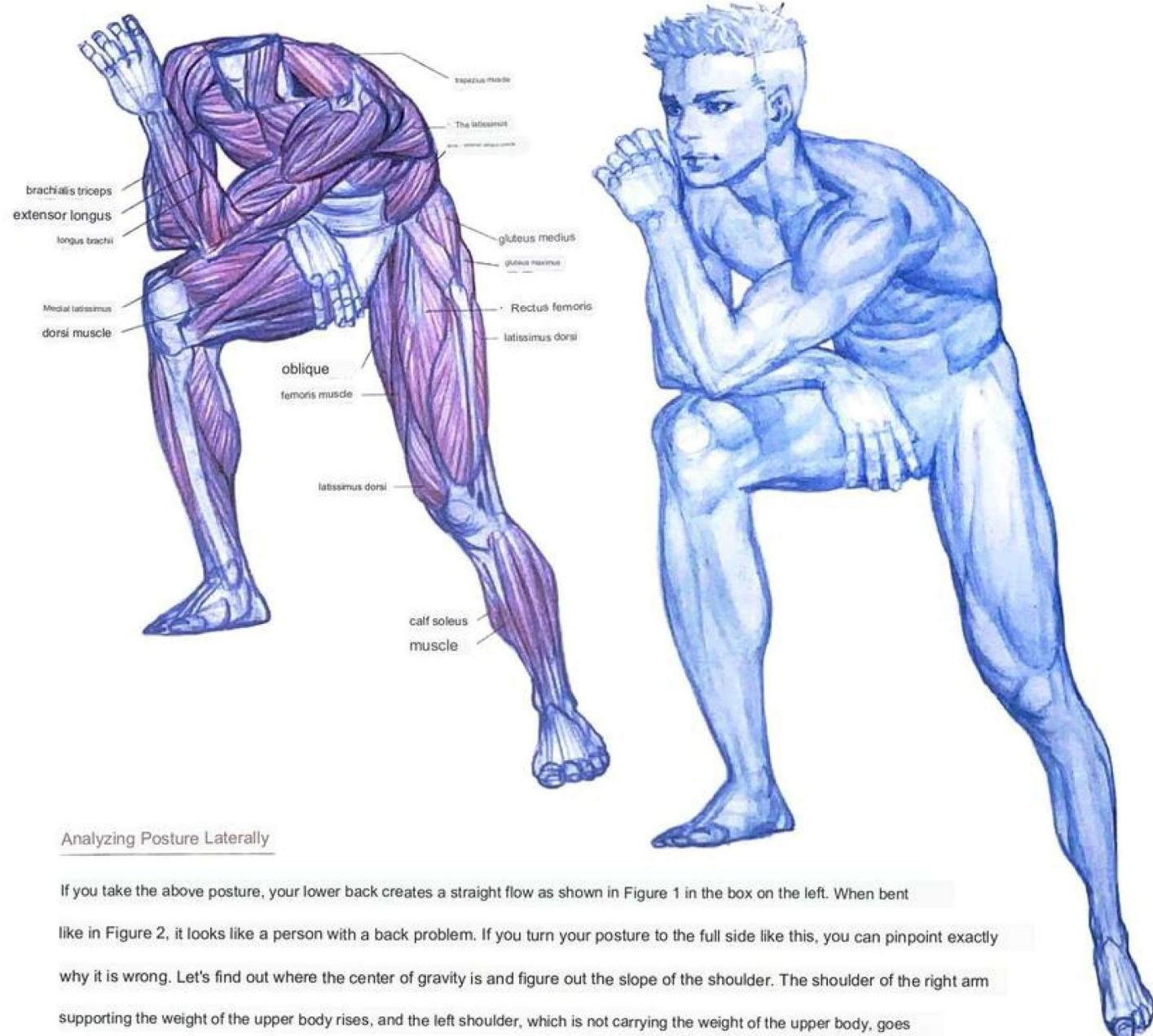
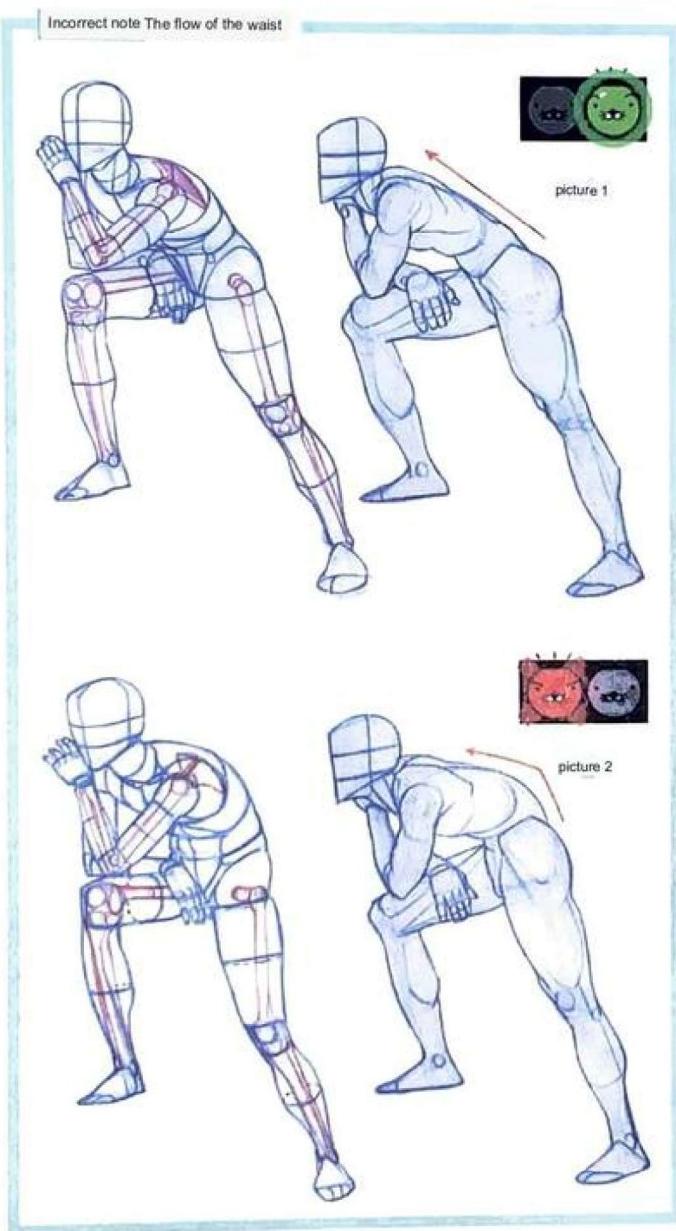
structure of the chest, shoulders, and back.



Is there a lot of difference?

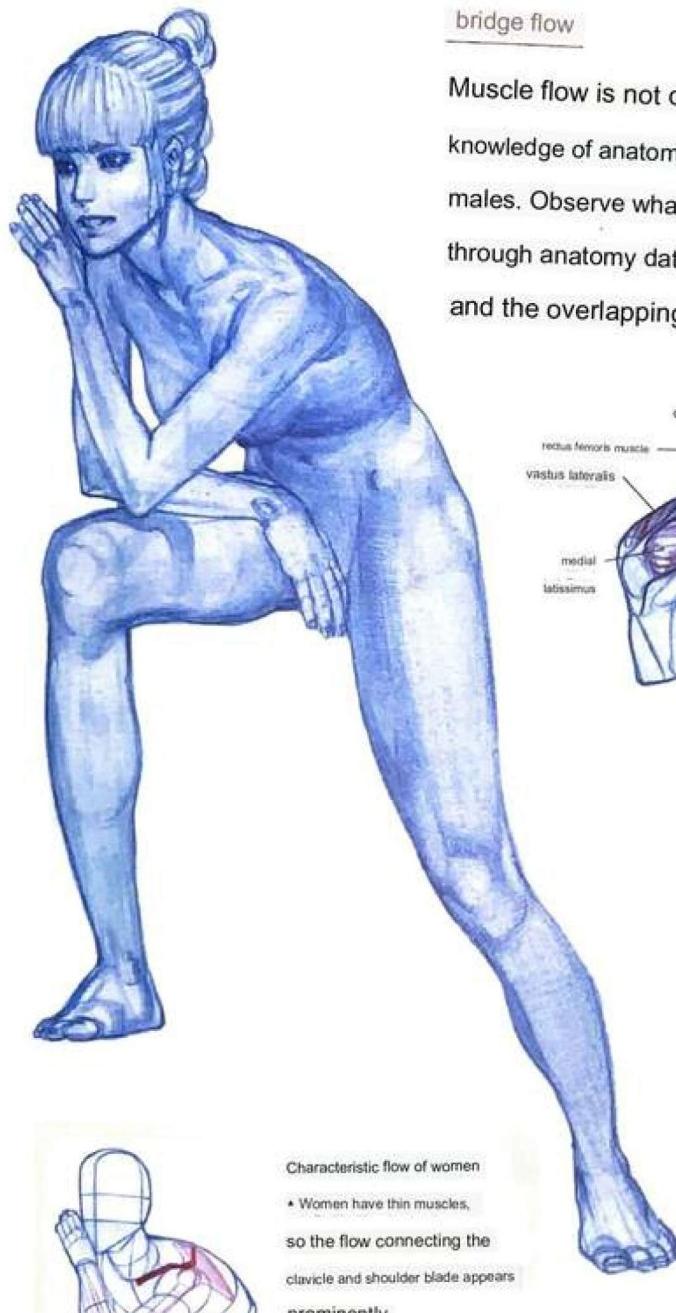


■ A posture with the weight of the upper body on one leg



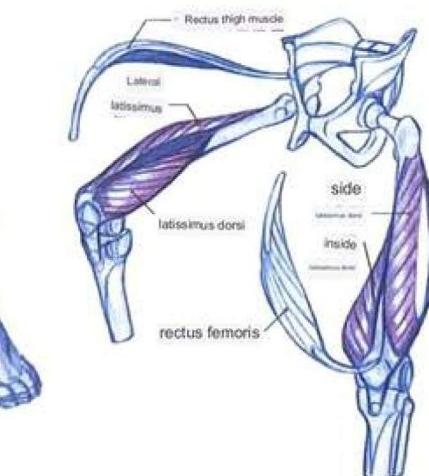
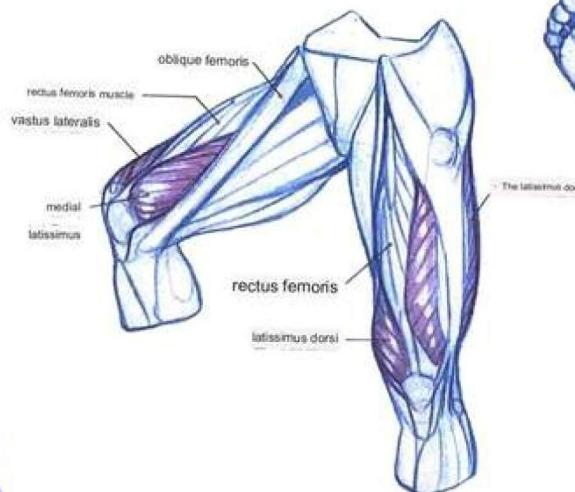
#### Analyzing Posture Laterally

If you take the above posture, your lower back creates a straight flow as shown in Figure 1 in the box on the left. When bent like in Figure 2, it looks like a person with a back problem. If you turn your posture to the full side like this, you can pinpoint exactly why it is wrong. Let's find out where the center of gravity is and figure out the slope of the shoulder. The shoulder of the right arm supporting the weight of the upper body rises, and the left shoulder, which is not carrying the weight of the upper body, goes down. Since the left arm is lowered, the back is slightly visible, so you need to know the location of the shoulder blades to express the back muscles. Be sure to indicate the location of the shoulder blades from the drawing stage.



### bridge flow

Muscle flow is not clearly visible in females, but knowledge of anatomy is essential when drawing males. Observe what the anterior thigh muscles look like through anatomy data. Let's check the flow of muscles and the overlapping order again.



- Characteristic flow of women
- Women have thin muscles, so the flow connecting the clavicle and shoulder blade appears prominently.

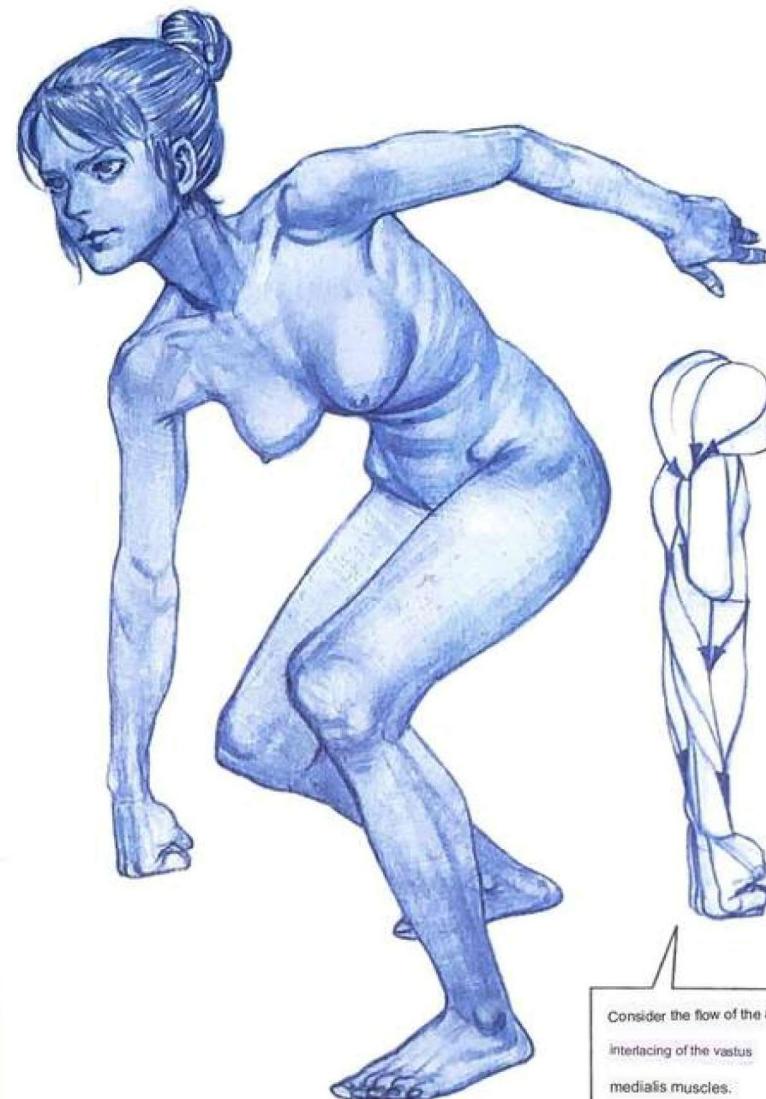
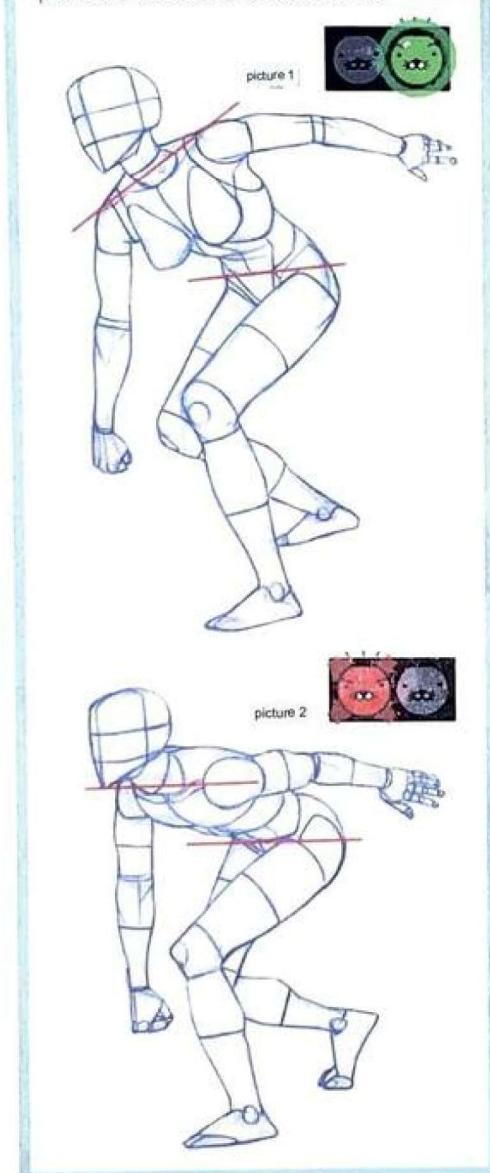


### A view from a different angle

It is a low angle that expresses as if looking up from a glass floor. It is characterized by the fact that the lower body gets longer due to perspective and the upper body gets shorter as you go up. Study the three-dimensional structure by comparing the flow of the human body from a normal angle with the flow of the human body from an angle we rarely see.

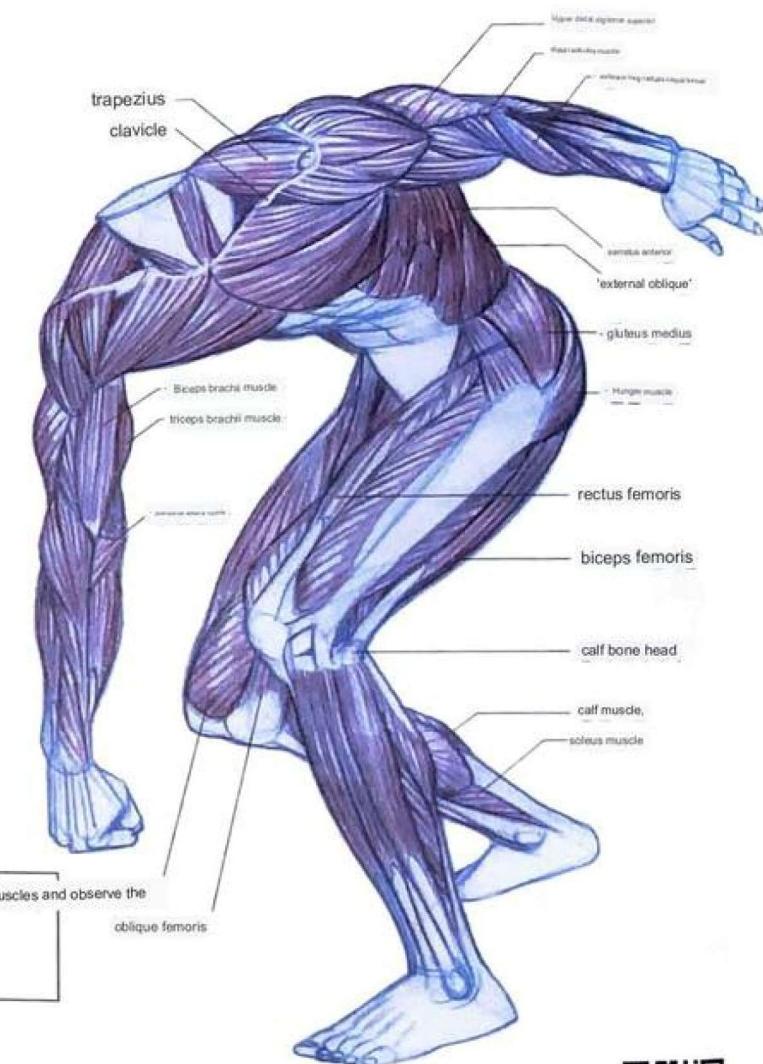
■ Position with one hand facing down

### Aunor Pelvis and Shoulder Tilt



The natural inclination of the body according to movement

Consider the flow of the arm muscles and observe the interlacing of the vastus medialis muscles.



In most of the postures except for the Attention posture, the tilt of the pelvis and shoulders is staggered.

It is natural to put more weight on one side than to distribute the weight evenly on both sides.

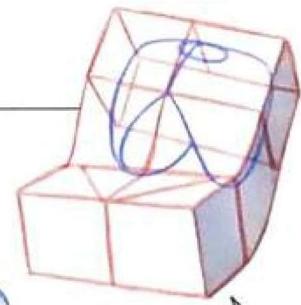
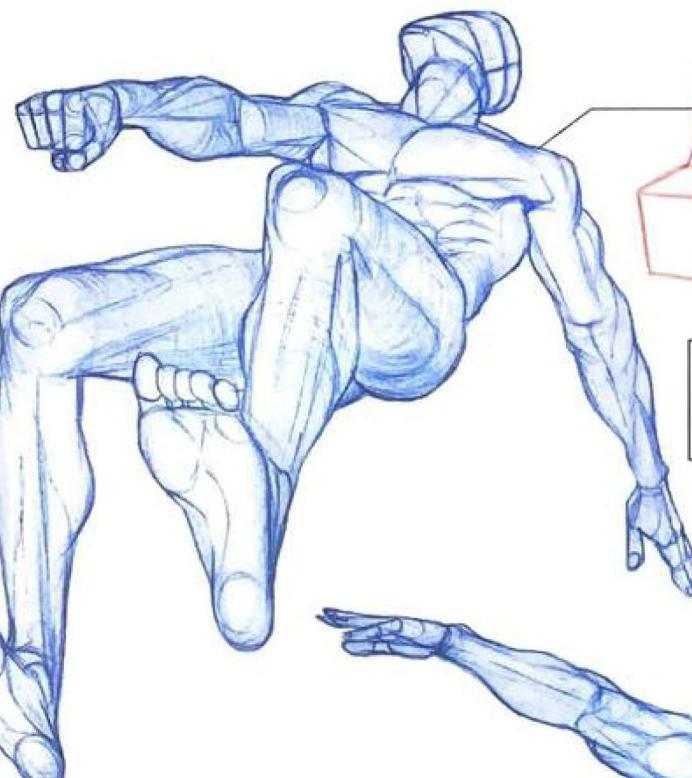
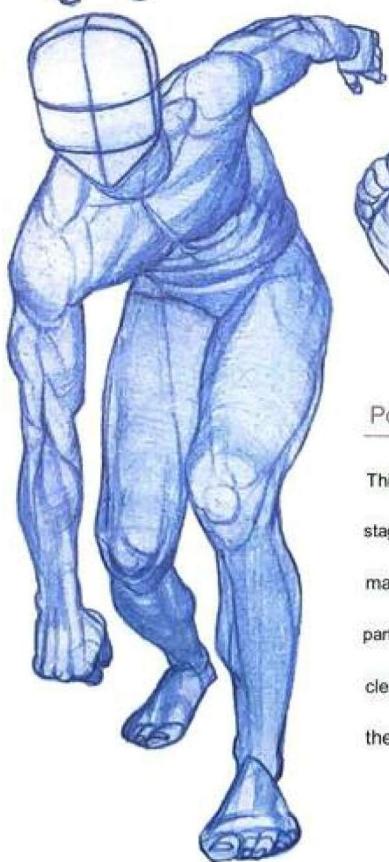
As shown in Figure 1 in the box on the left, imagine a rhythmic movement by staggering the tilt of the pelvis and shoulders. As shown in Figure

2, even if the center of gravity, proportion, and sense of mass are all right, if the inclination of the pelvis and shoulders is the same, the liveliness of the human body decreases.





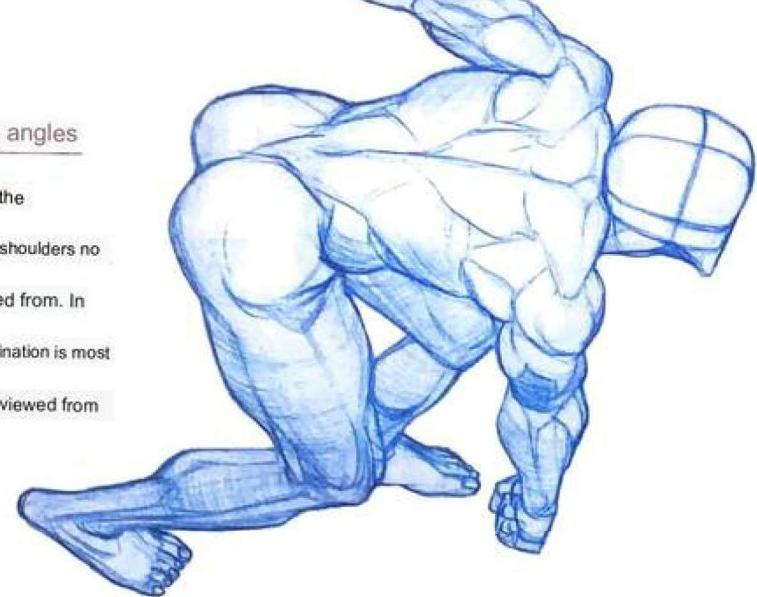
point of contrast



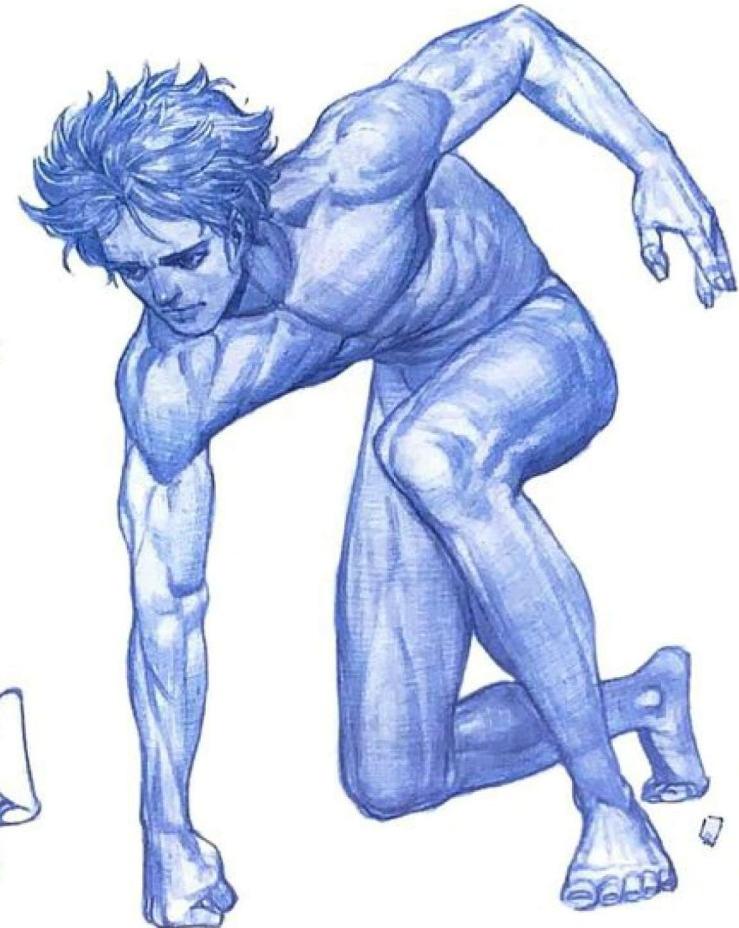
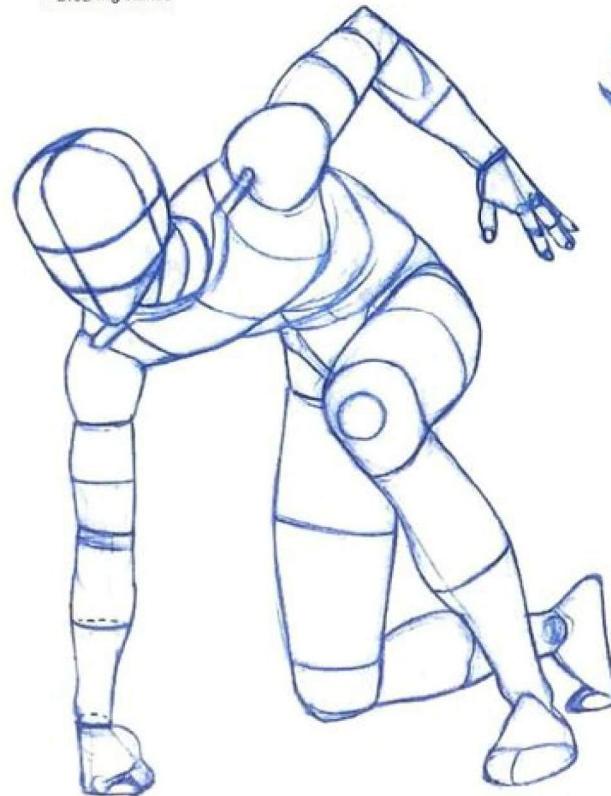
Take a look at the  
tilt of the pelvis box hidden  
by the legs!

#### Posture from different angles

This posture should express the staggered tilt of the pelvis and shoulders no matter what angle it is viewed from. In particular, the difference in inclination is most clearly visible from the angle viewed from the front.

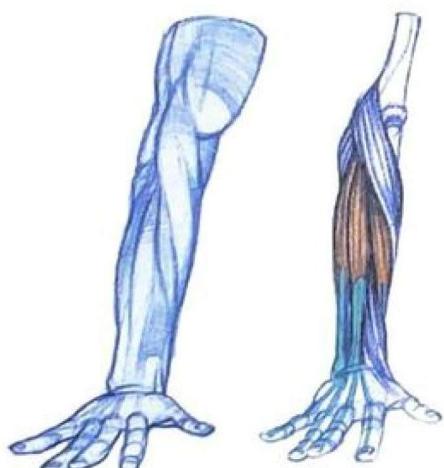


■ Breaking stance

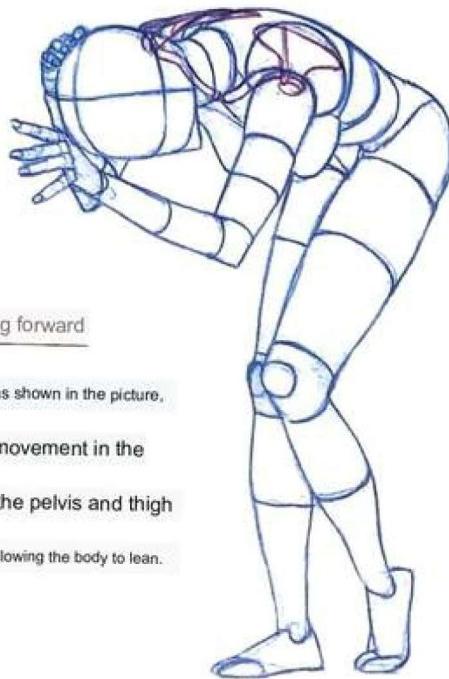


normal body type and muscular body type

In the 'Pose with one hand pointing down' on the previous page, the action of putting a fist down on the floor was added to give it a more dynamic feel. When drawing a muscular character, the sense of volume of the muscles should increase based on the correct anatomy. If you deviate from the basic structure of muscles just because your body shape changes, you become a monster instead of a muscular character. The wrist extensors show a split flexion even when the fist is closed. Since it is a muscle that appears frequently on the outside, it is important to know the structure of the three branches and the ratio of tendons to tendons.



■ Lower back posture



the action of leaning forward

When leaning forward, as shown in the picture, there is almost no movement in the waist, but instead, the pelvis and thigh connection part moves, allowing the body to lean.

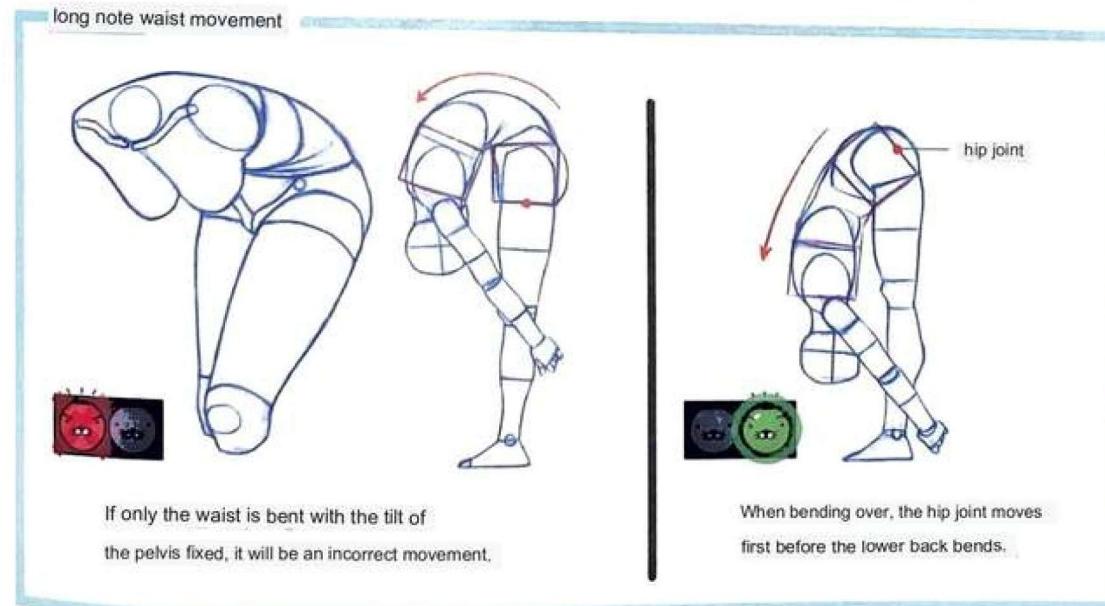


The upper trapezius

muscle contracted to raise the woman's thin muscle layer arm, but the thickness of the contracted muscle does not stand out like a man's.



This is a form in which the chest sags in the direction of gravity.

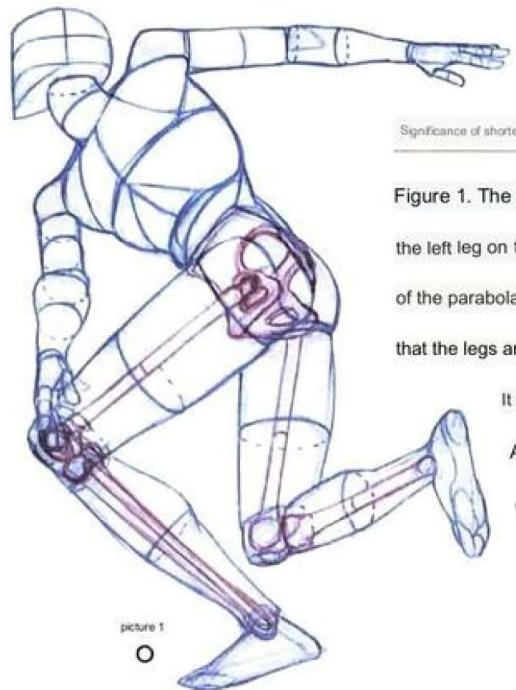


If only the waist is bent with the tilt of the pelvis fixed, it will be an incorrect movement.



When bending over, the hip joint moves first before the lower back bends.

■ twisted posture

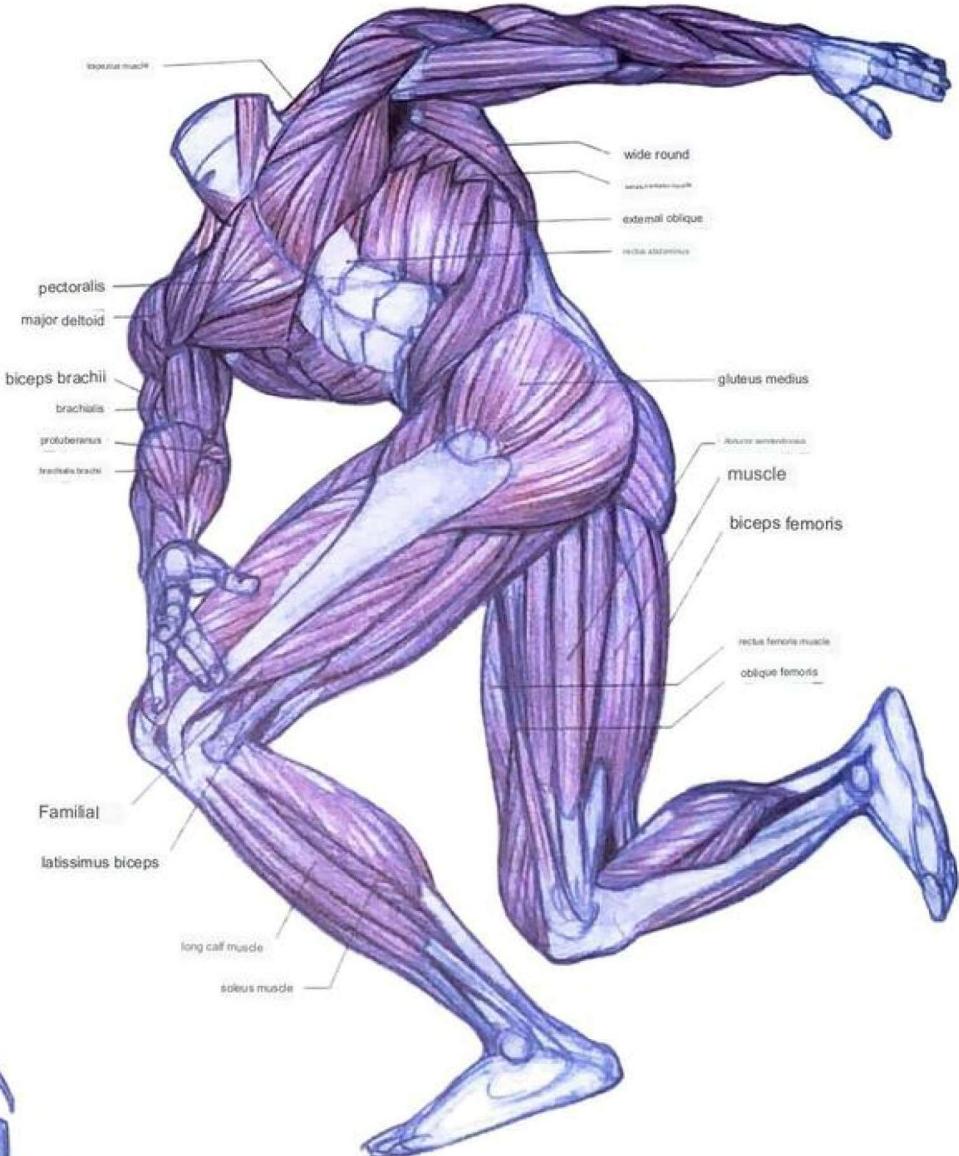
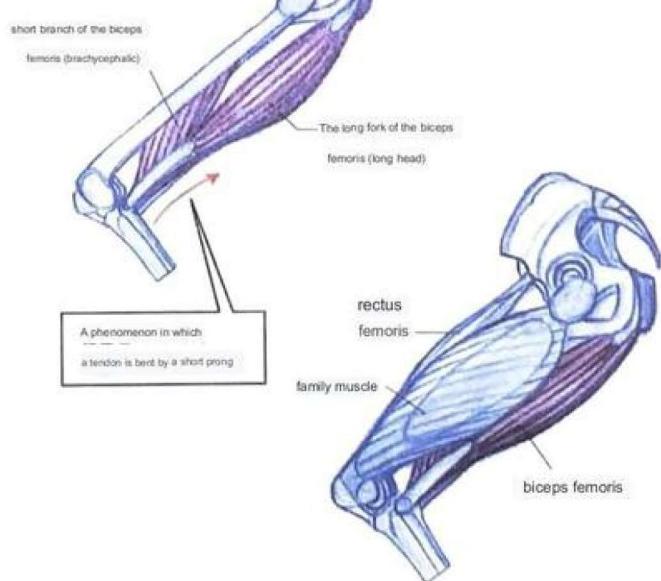


Significance of shortening direction

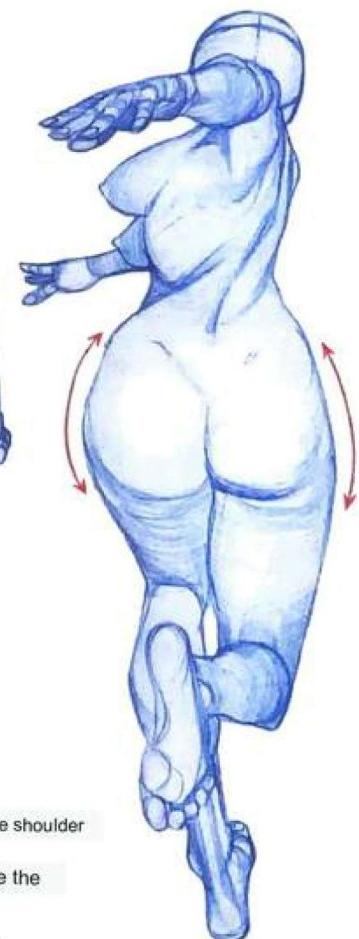
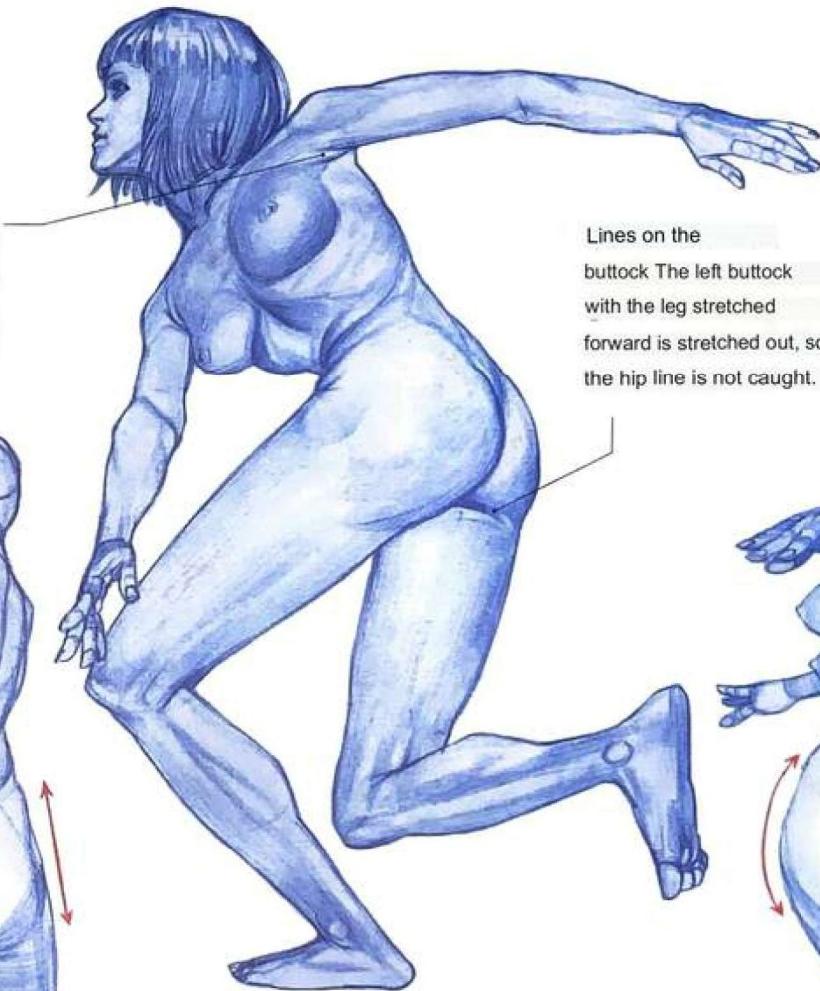
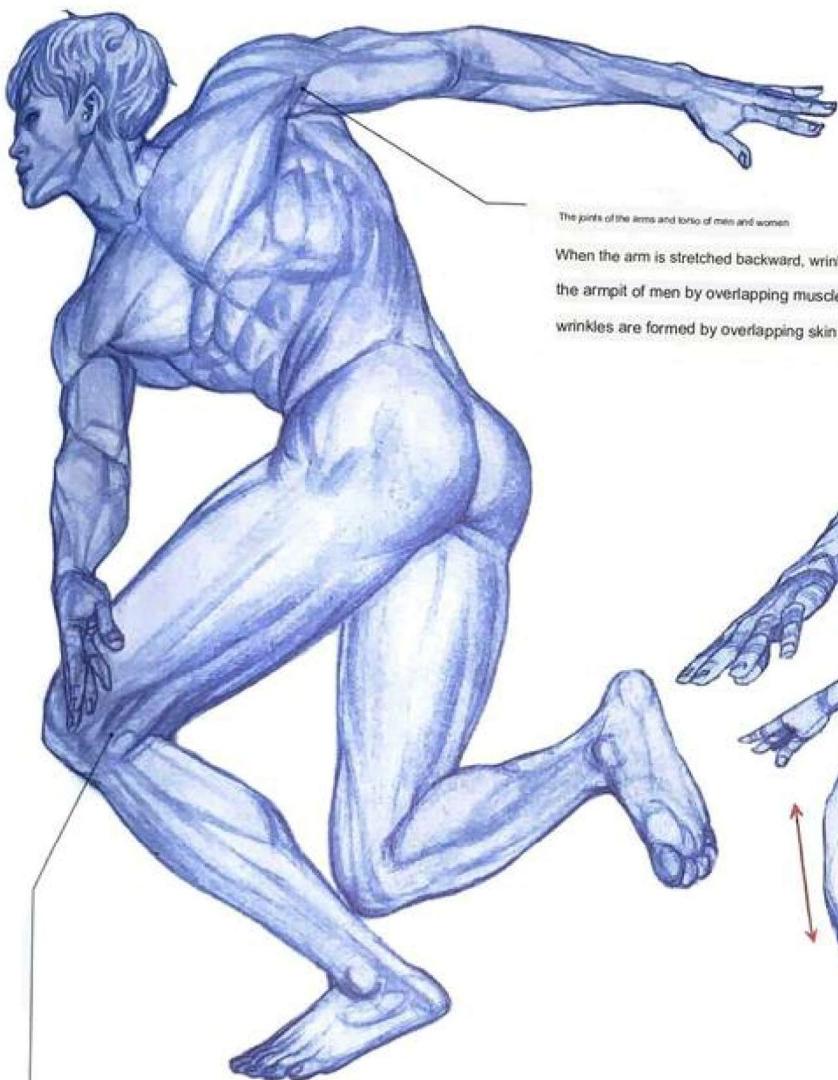
Figure 1. The outline silhouette of 2 is the same, but the parabola of the left leg on the ground is drawn in opposite directions. The direction of the parabola tells the direction of the legs, and Figure 2 shows that the legs are outward compared to Figure 1.

It stretches out and gives an unstable posture.

As such, the direction of a parabola in figure painting contains important information, so it must be drawn carefully.



Observe how much the biceps femoris is covered by the latissimus dorsi muscle when viewed from the side. Because the short branch of the biceps femoris pulls on the tendon, the tendon of the biceps femoris bends. Check out the bent tendon behind your family's knee right now!



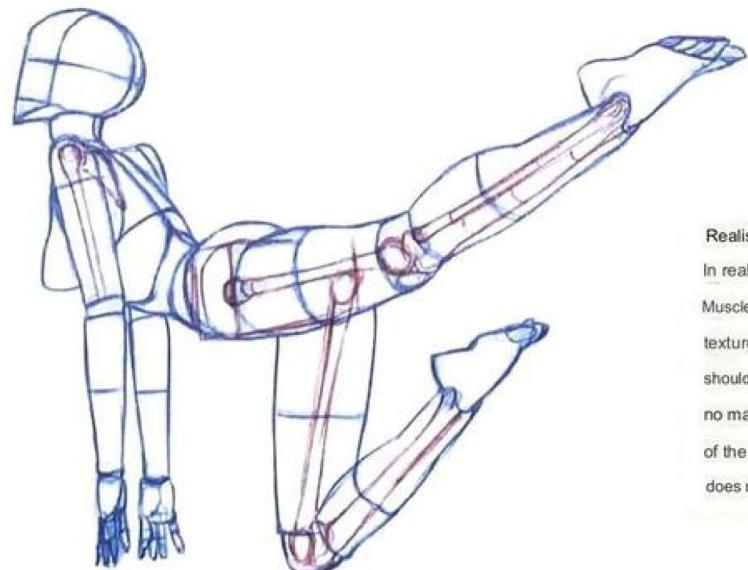
In men, the flow of the buttocks is straight due to the influence of muscles, and in women, the flow of fat is accumulated to create a round flow. Men show off their back muscles, while women show only the shoulder blades and spinal flow. When drawing a female breast, first calculate the position of the center line of the body and draw both breasts symmetrically.

## ■ stretching posture



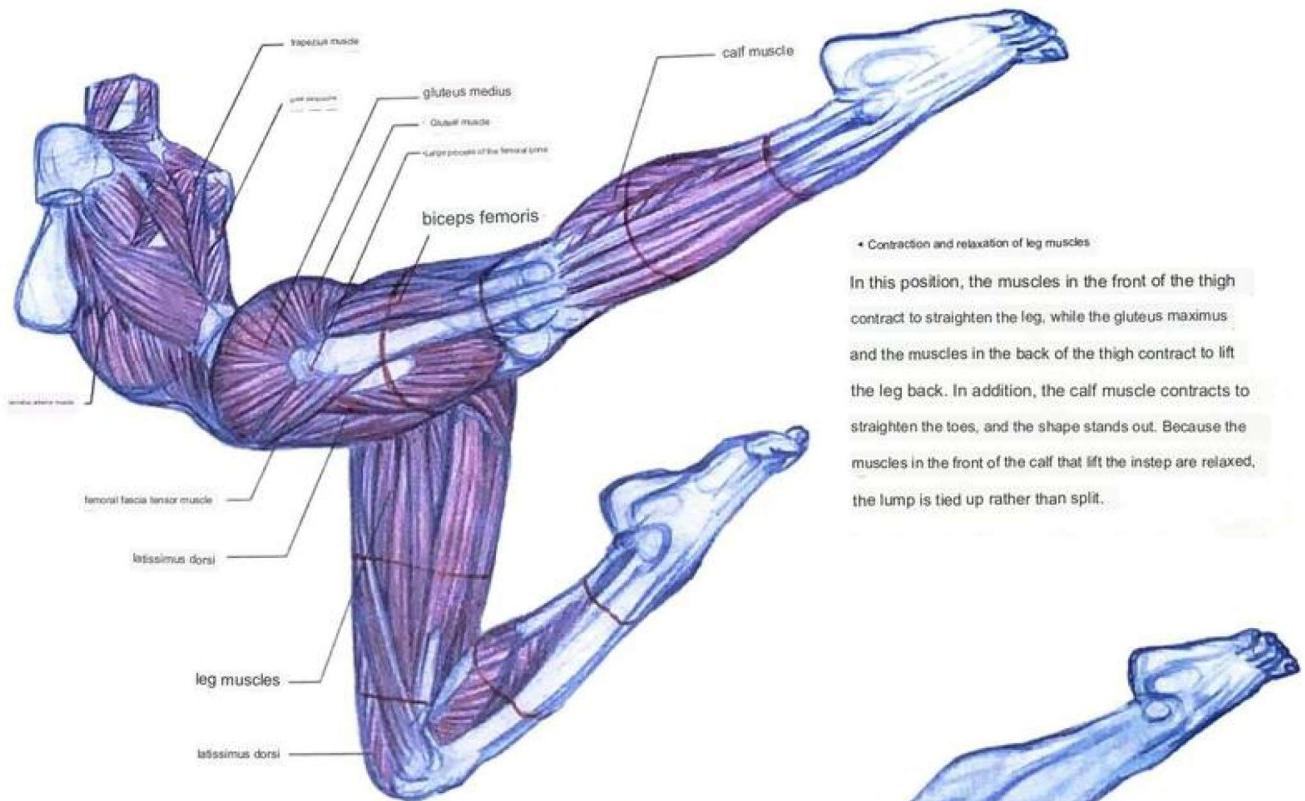
Know which muscles contract and relax

The weight of the body is supported by both hands and the right knee, and the left leg is stretched backward to stimulate the erector spinae and biceps femoris. This movement, which is often performed in yoga or aerobics, increases the elasticity of the buttocks by strengthening the spine and gluteus maximus. It is a posture that combines the flexibility of the arched low back with the tension of the powerfully extended legs.



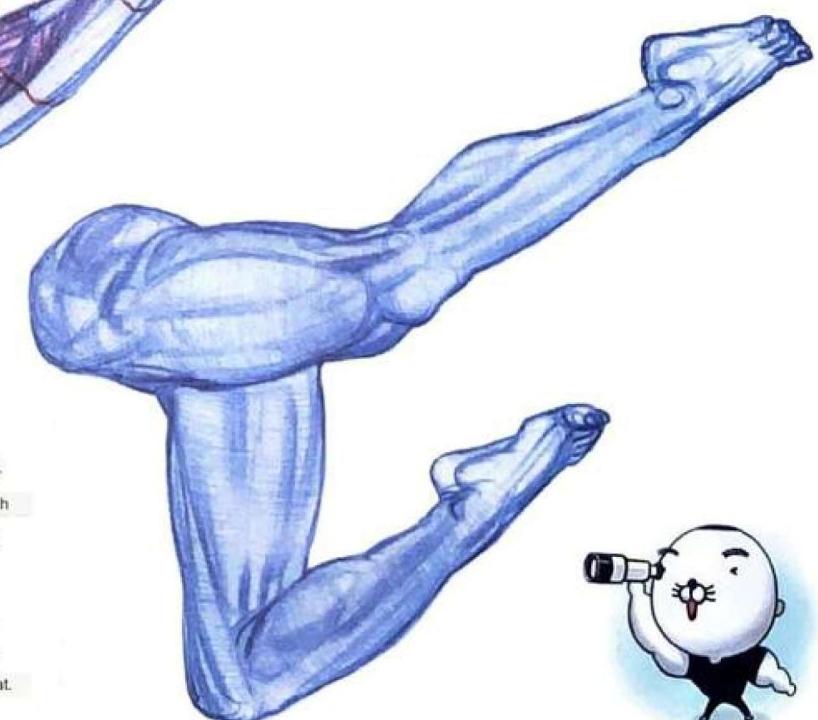
### Realistic muscle description▶

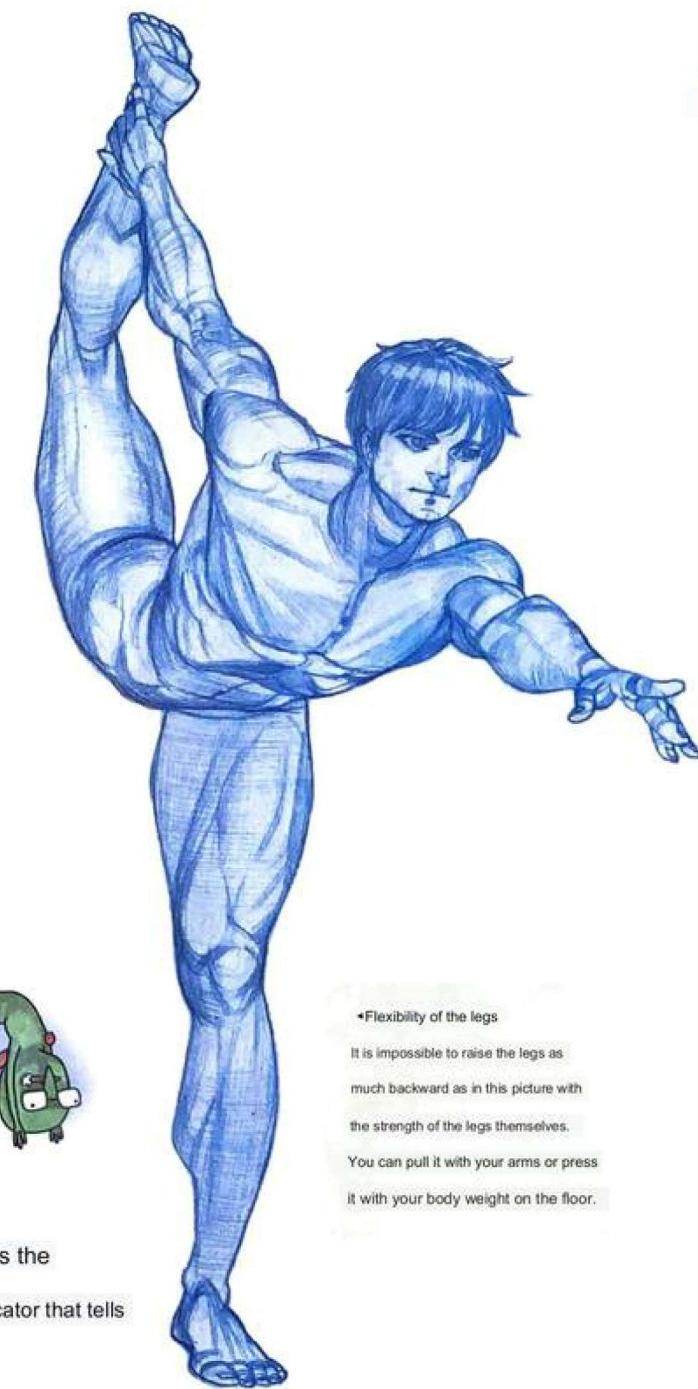
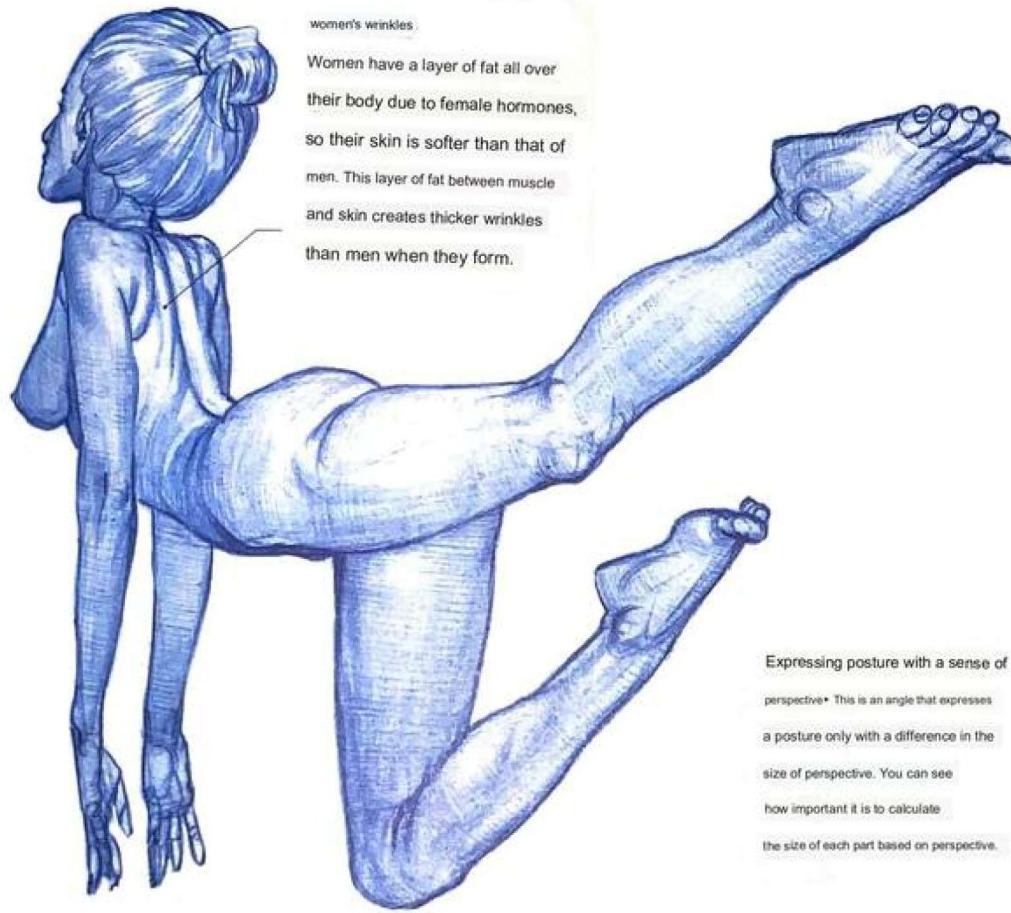
In real life, all the muscles seen in anatomy data are not visible. Muscles in the areas where strength is applied should be drawn with texture, and muscles in areas where strength is not applied 을 should be drawn in a large lump rather than split. Therefore, no matter what pose you draw, you need to know which parts of the pose are strong and which ones are not. Of course, this does not apply to characters with less muscle or thicker layers of fat.



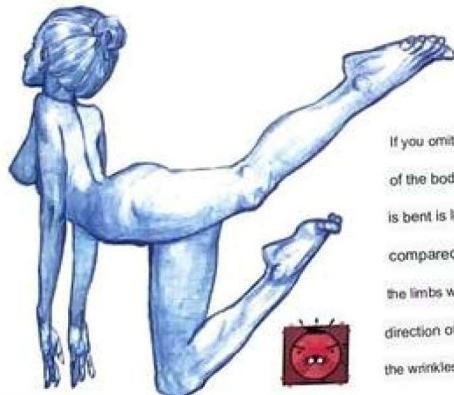
### Contraction and relaxation of leg muscles

In this position, the muscles in the front of the thigh contract to straighten the leg, while the gluteus maximus and the muscles in the back of the thigh contract to lift the leg back. In addition, the calf muscle contracts to straighten the toes, and the shape stands out. Because the muscles in the front of the calf that lift the instep are relaxed, the lump is tied up rather than split.





#### Onnot Wrong Expression of Wrinkles



If you omit the places where the wrinkles should be, the surface of the body becomes flat and information about how much it is bent is lost. Conversely, if the wrinkles are drawn too long compared to the degree of bending of the joints, the limbs will look severed or the joints will look weak. The direction of the wrinkles is just as important as the length of the wrinkles, so pay close attention to them.



#### Information you can tell from wrinkles on your skin

The expression of wrinkles on the skin reveals the texture of the elastic skin. It also serves as an indicator that tells you if the area is folded or bent.

#### \*Flexibility of the legs

It is impossible to raise the legs as much backward as in this picture with the strength of the legs themselves. You can pull it with your arms or press it with your body weight on the floor.

## ■ Twisted back posture

men's back movements

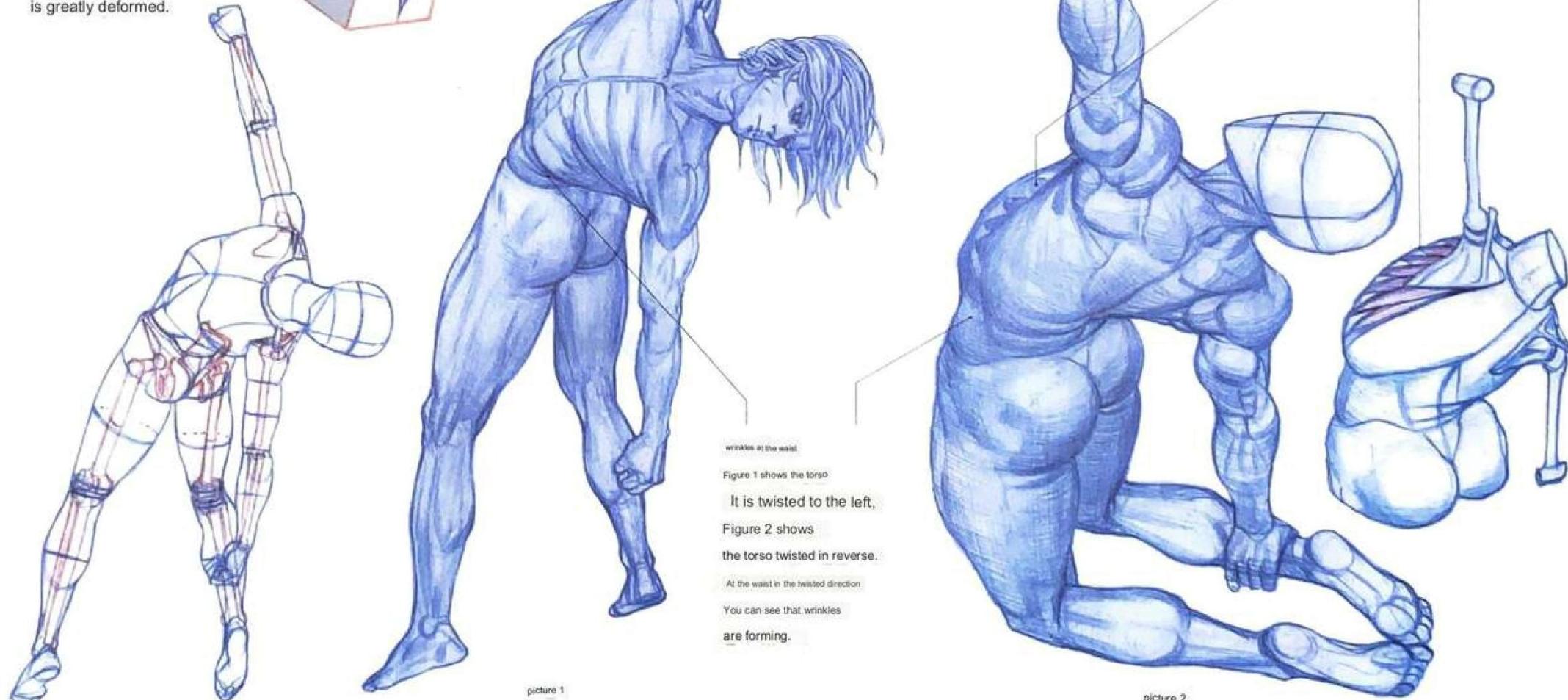
The postures on this page are

Bend backwards and sideways

It's a twisted posture.

the middle of the body box

is greatly deformed.



serratus anterior muscle

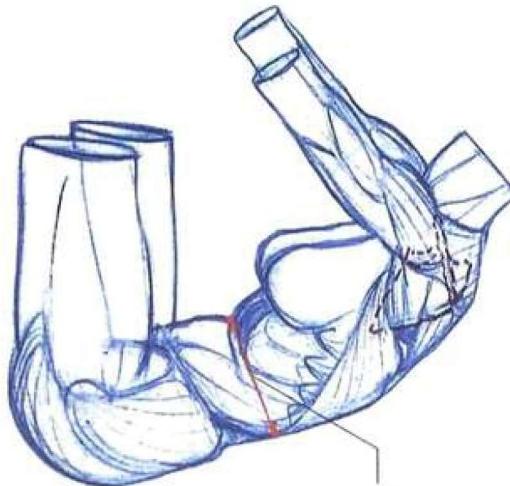
Depending on the position of the arm, the shoulder blade moves around the collarbone. Since most of the back muscles attach to the shoulder blades, the location of the shoulder blades is the most important indicator when drawing the back.

As shown in the picture below, the serratus anterior muscle is also affected by the scapula, so to draw the serratus anterior muscle, you need to know exactly where the scapula is.

■ Women's waist movement

female waist features

Women's waists are narrower than men's, and the movement of the waist is more flexible. Unless you want to draw a muscular female character, the rectus abdominis, latissimus dorsi, and serratus anterior muscles are omitted to preserve the unique flow of women.

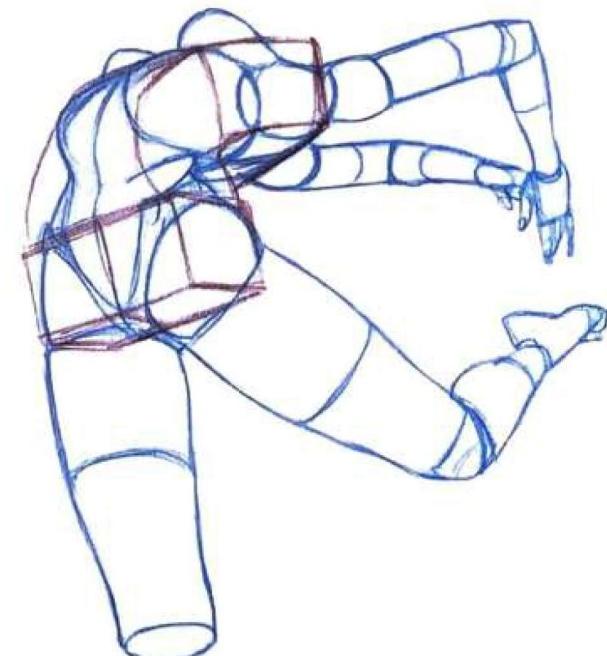


The end of the lumbar ribs of a woman bent forward is the thinnest part of the waist, and a horizontal crease forms at this line.



female chest line

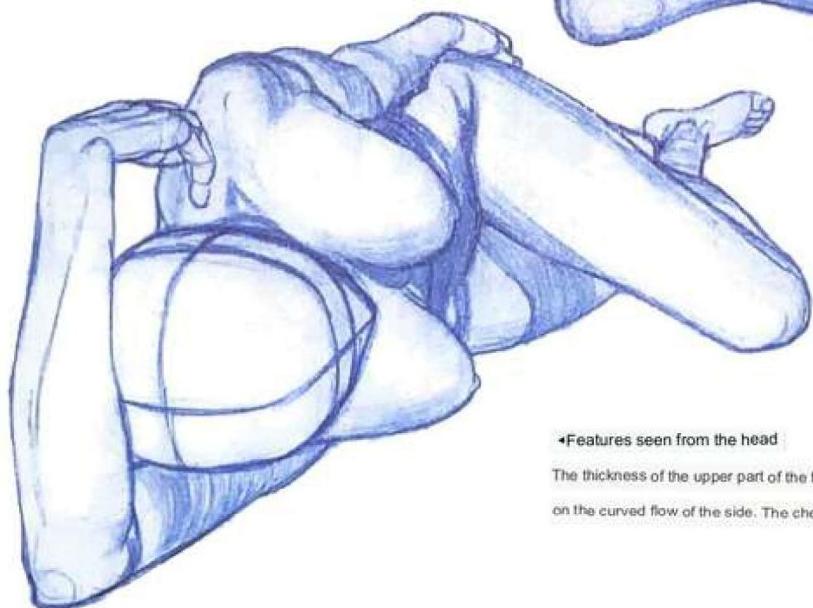
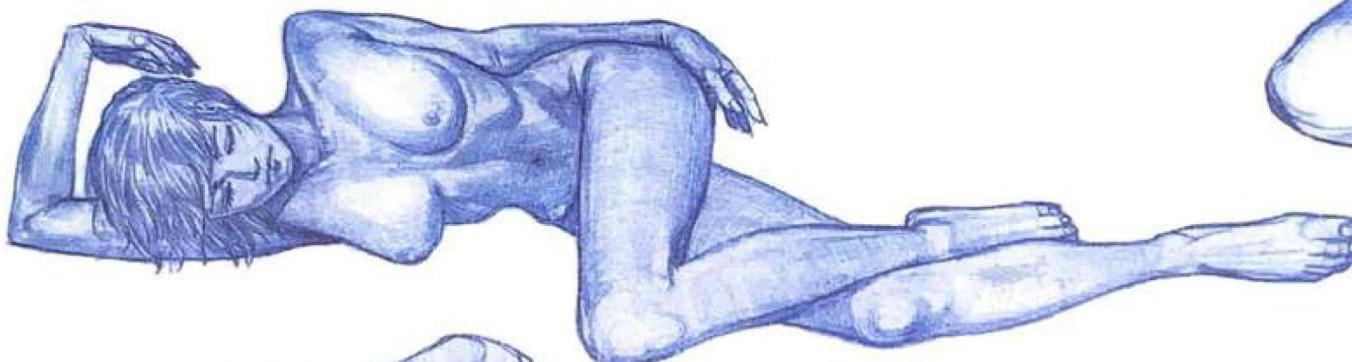
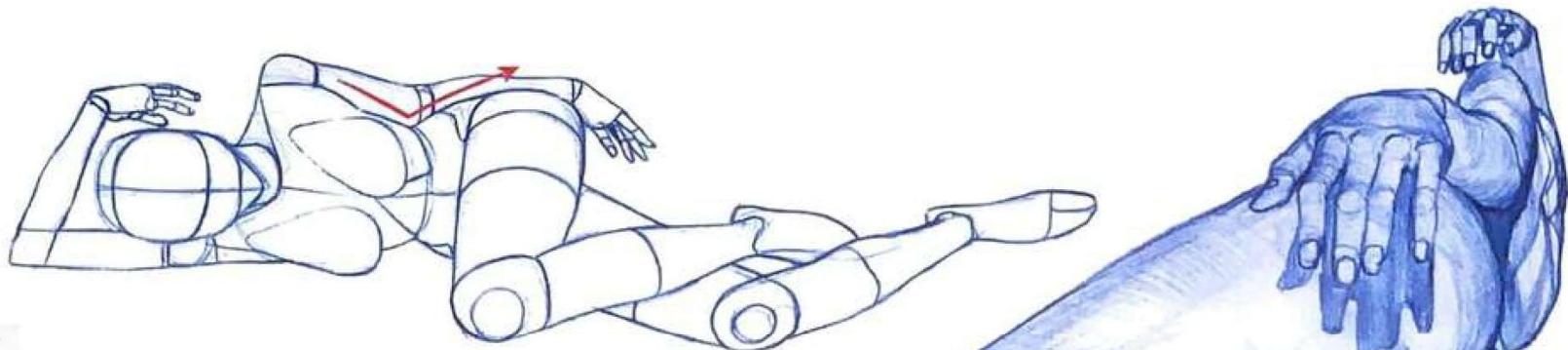
When a woman leans back, her ribs are clearly exposed and the lines of each rib stand out. It is a phenomenon that appears because the thickness of the muscle is thinner than men, and there are many cases where this contrast is mistaken for the serratus anterior muscle and the external oblique muscle, but this is caused by the ribs.



## ■ Side lying position

### female body flow

As shown in the picture, the V-shaped line that goes from the ribs to the pelvis when a woman lies on her side is a symbolic flow of women. In addition, when the human body is overlapped, the sense of muscle volume is reduced, so the arms and legs are flexibly overlapped.

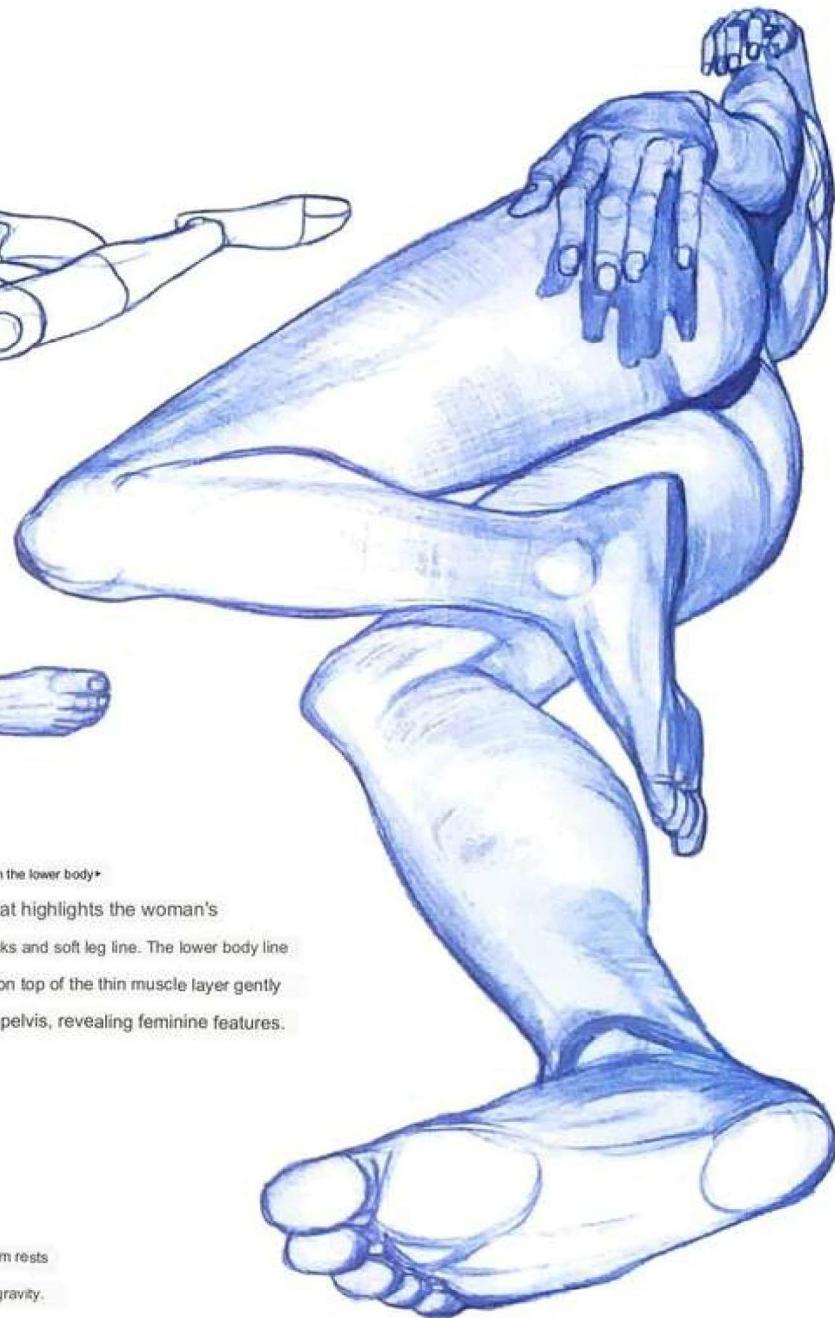


#### ►Features seen from the head

The thickness of the upper part of the female shoulder is not as thick as that of the male, and the arm rests on the curved flow of the side. The chest flow connected from the shoulder sags downward due to gravity.

#### ►Features viewed from the lower body

It is an angle that highlights the woman's voluminous buttocks and soft leg line. The lower body line covered with fat on top of the thin muscle layer gently connects to the pelvis, revealing feminine features.

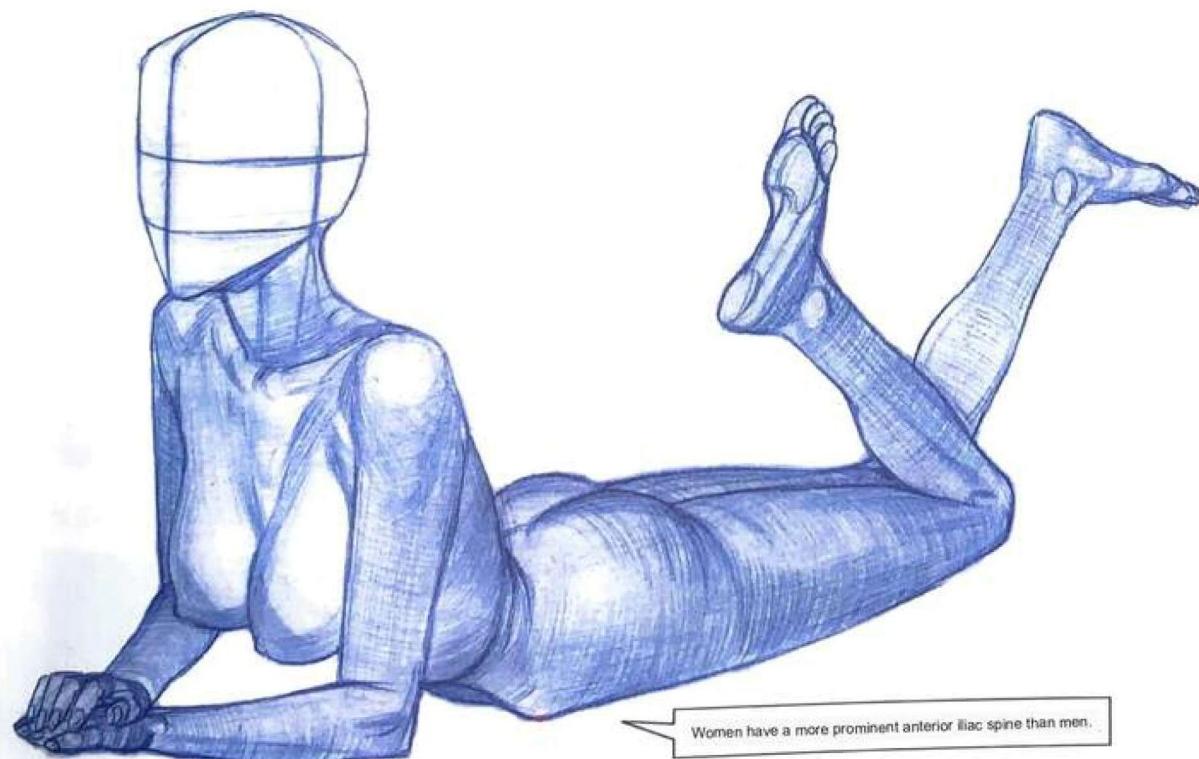
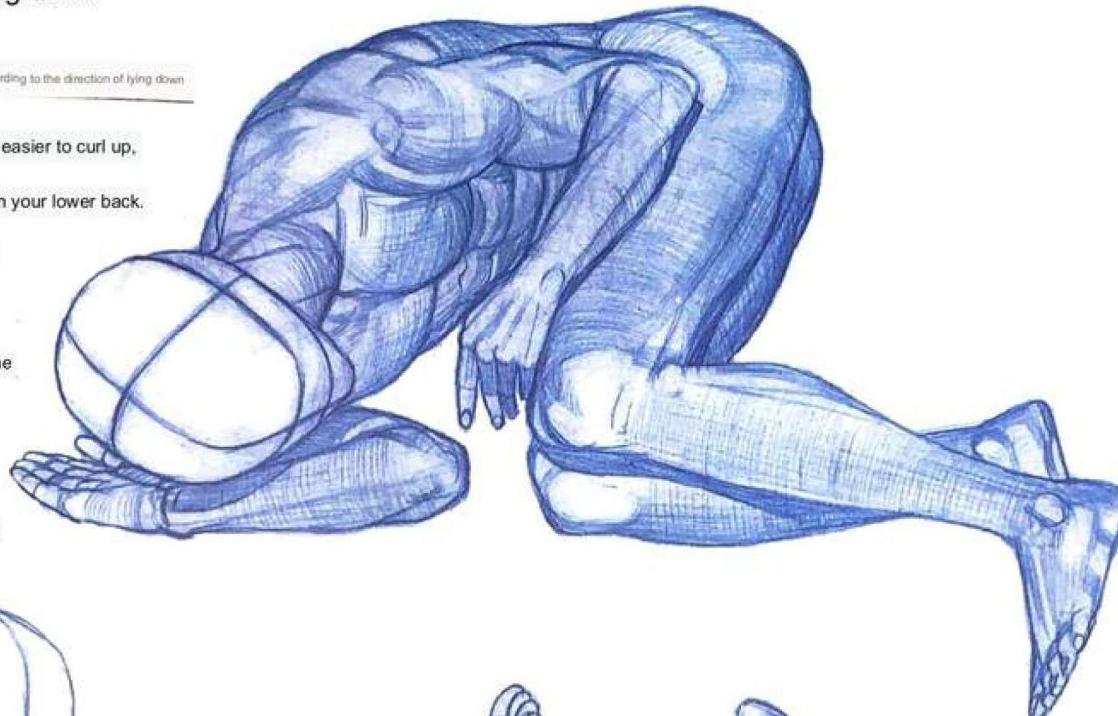


## ■ Crouching or lying down

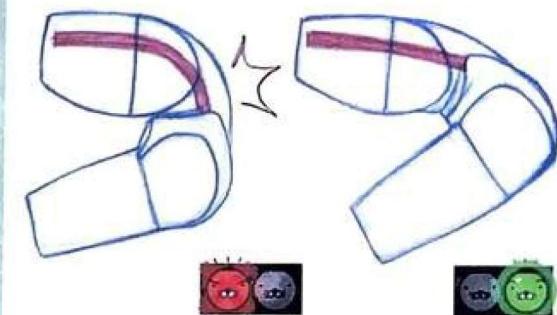
Movement of the legs and lower back according to the direction of lying down

When lying on your side, it is easier to curl up,  
and your legs bend more than your lower back.

When the upper body is raised  
while lying down, the  
position of the lumbar vertebrae  
must be well grasped and  
drawn to create the  
correct flow of the human body.

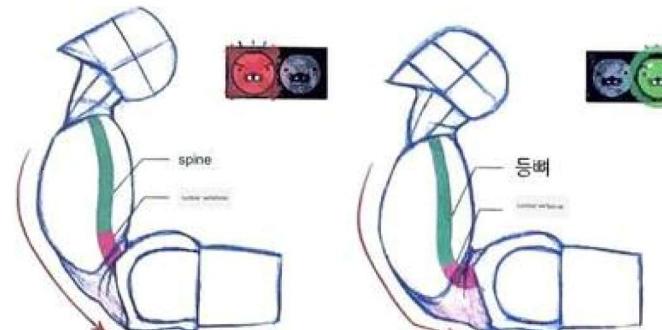


Incorrect answer note When bending forward



When crouching forward, do not overbend the movement of the waist as shown in the incorrect answer picture. It is an angle beyond the range of motion of the spine.

When Ohnot's back is bent



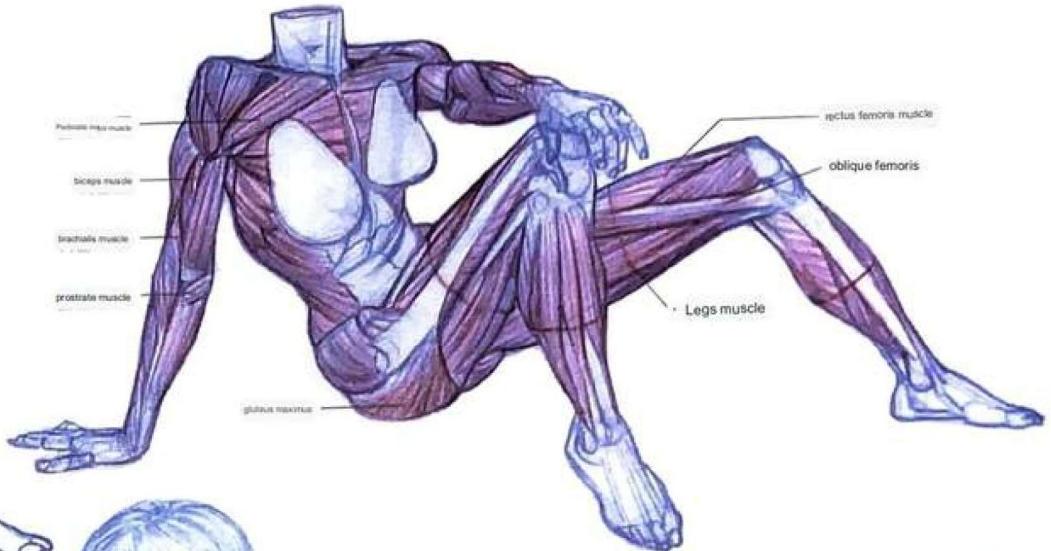
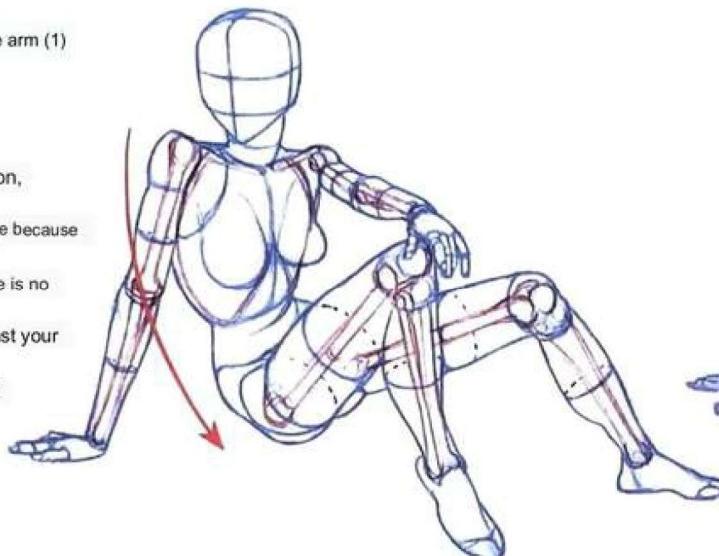
Since the waist moves around the lumbar vertebrae, you need to know exactly where the spine is located and where it bends. In the case of the picture with the incorrect answer, the lumbar vertebrae were not bent, but the part where the lumbar vertebrae and sacrum were connected moved. The backbone should be bent as shown in the picture. Depending on how you understand the movement of the lumbar spine, the flow of the body changes.

## 2 Various sitting positions

### ■ Sitting posture leaning on one arm (1)

Characteristics of a comfortable sitting position

In a comfortable sitting position,  
the torso and pelvis form a C shape because  
the lower back is relaxed. If there is no  
wall to lean against, lean against your  
arms to support the weight of  
your upper body as shown.



An arm that supports the weight of an incorrect answer note

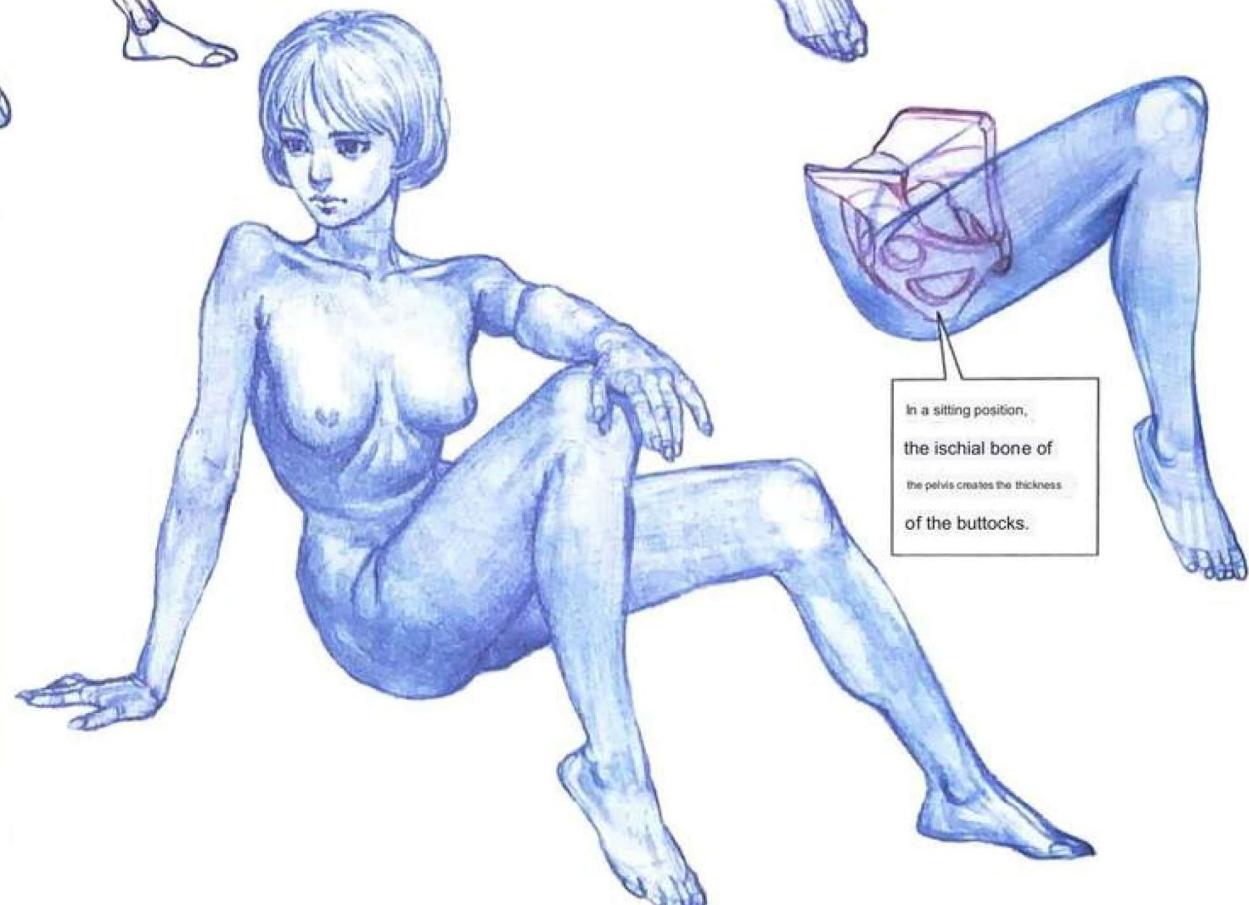
**rumble**

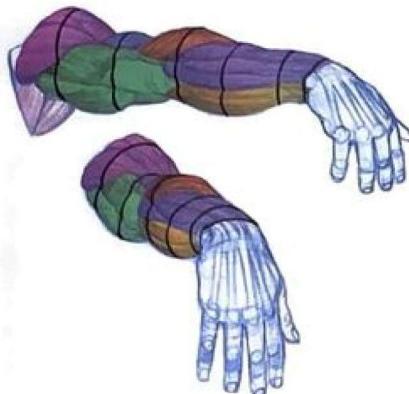
If the shoulder on the side of the weight is raised, it becomes an unstable torso that looks like it will slide.

cervical joint.

In the posture of leaning on one arm, the expression of the shoulder on the weighted side is important. It's like when you're standing cross-legged, the pelvis on the side of the weighted leg rises. However, unlike the pelvis, the shoulder has many joints, allowing for a variety of movements.

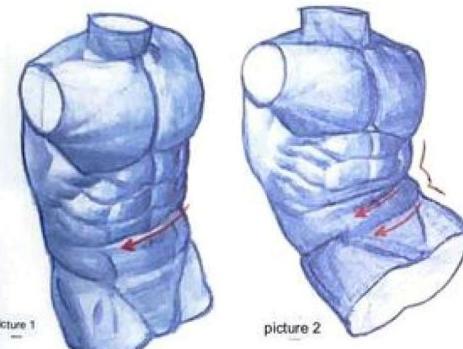
As you learned in figure drawing, the shoulder rises in a curve along the clavicle based on the articular joint surface. As shown in the picture above, if there is no shoulder movement on the arm loaded with weight, you will not feel gravity or the weight of the body, making it look like a toy.





### About shortening

In order to shorten the complex human body, do not try to express it in a dramatized form from the beginning, but first express the perspective with a simple figure. After that, the muscles with similar flow are grouped together on top of the figure and overlapped as shown in the picture on the left.



picture 1

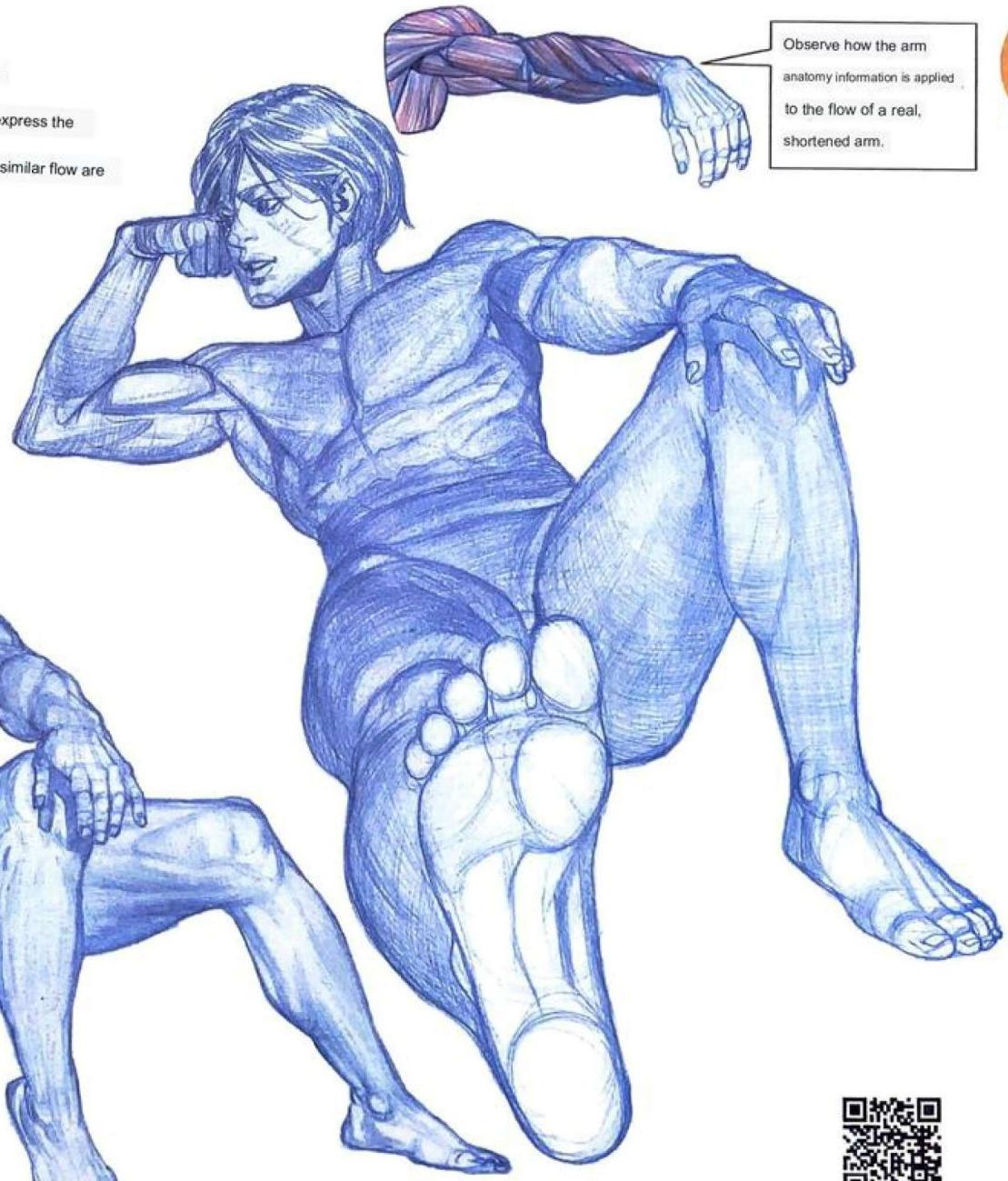
picture 2

### Location of belly folds in men

When looking at a man with a muscular body type, as shown in Figure 1, if you slightly bend your body, wrinkles form along the line where the ribs end. As shown in Figure 2, further bending at the waist creates a second crease at the line of the upper anterior iliac crest.



The shape of belly wrinkles appears differently depending on the amount of muscle or fat.



■ Sitting posture leaning on one arm (2)

Important answer table

Spinal flow in sitting position

picture 1



Curved spine flow

Looking at the posture of sitting on one arm from the back, as shown in Figure 1, in the resting posture, the erector spinae muscle does not have power, so the flow of the spine is curved. Also, the shoulder of the right arm supporting the weight is raised.

picture 2



straight spine flow

Figure 2, where the flow of the spine is straight.

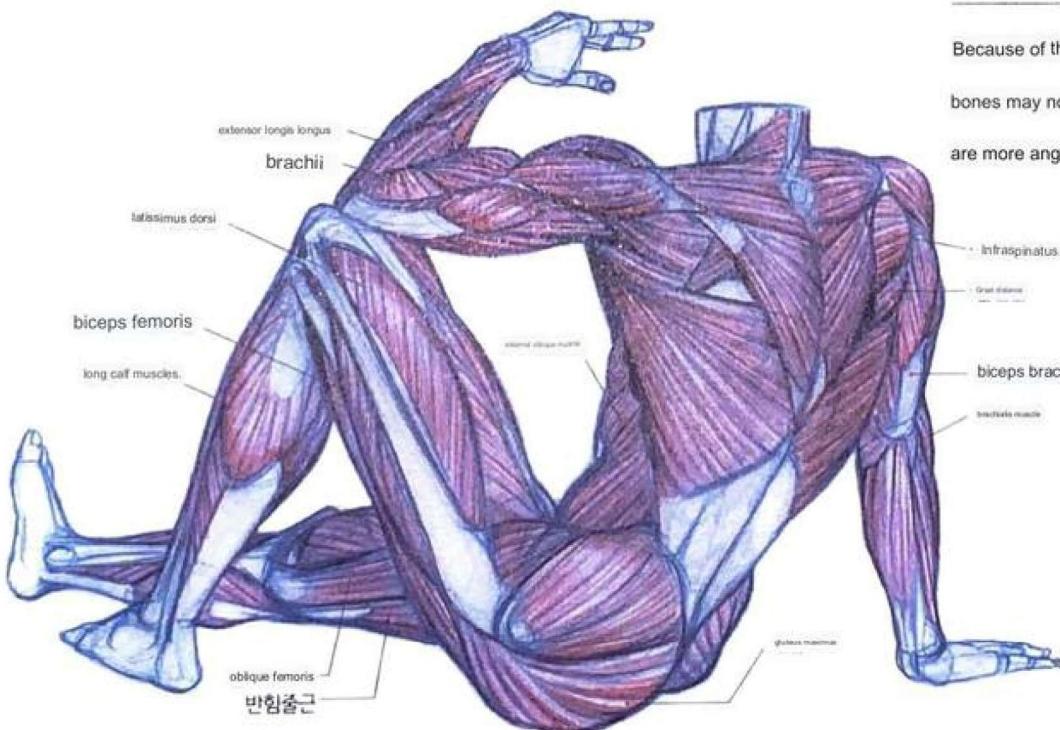
Look, not leaning on one arm is sitting with strength on the

I feel like I'm leaning against a wall.

waist, or Figure 2 is more static than Figure 1.

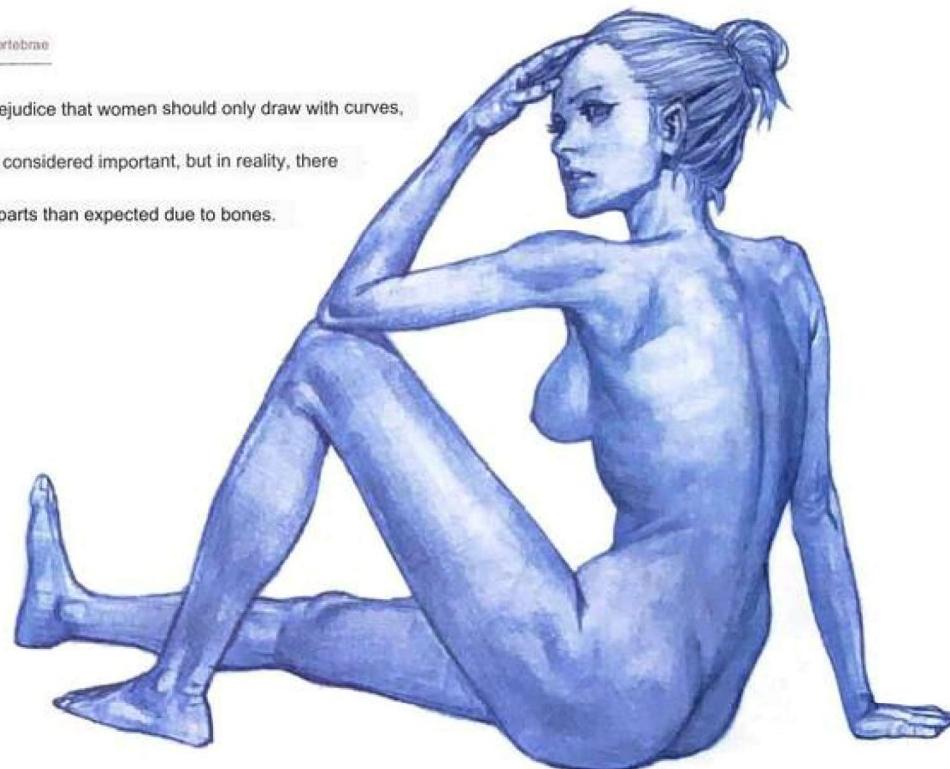
The reason it is visible is the curve of the waist.

Because the flow is gone.



shoulder blades and vertebrae

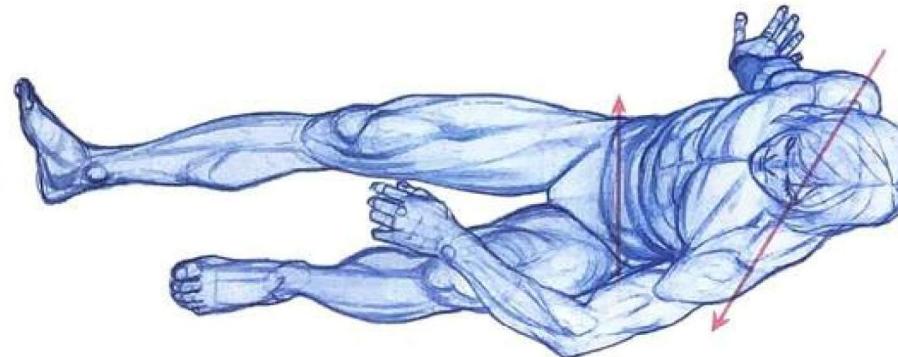
Because of the prejudice that women should only draw with curves, bones may not be considered important, but in reality, there are more angular parts than expected due to bones.



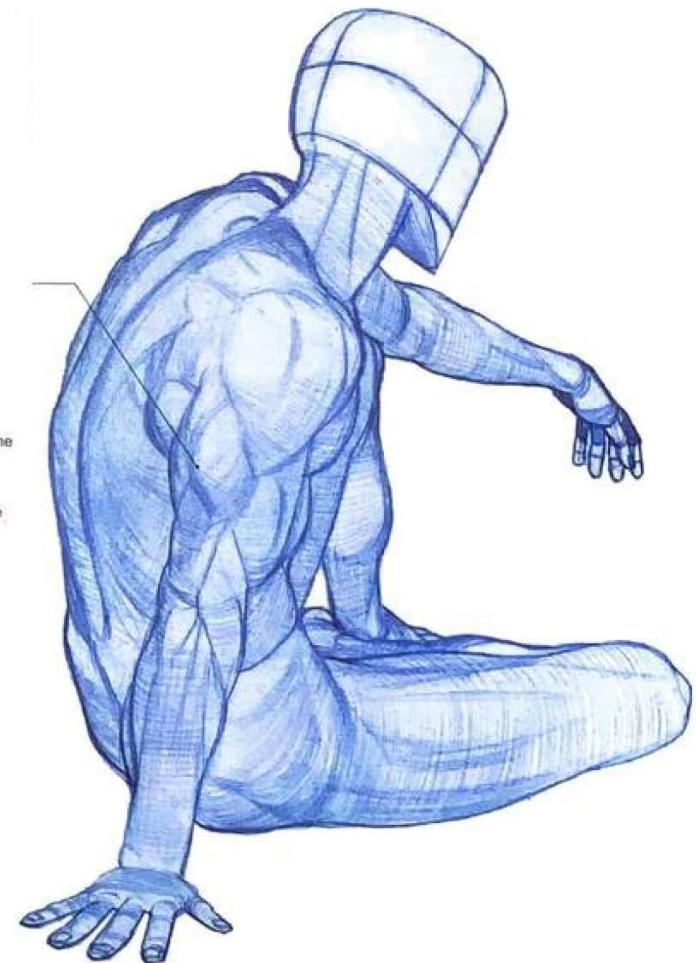
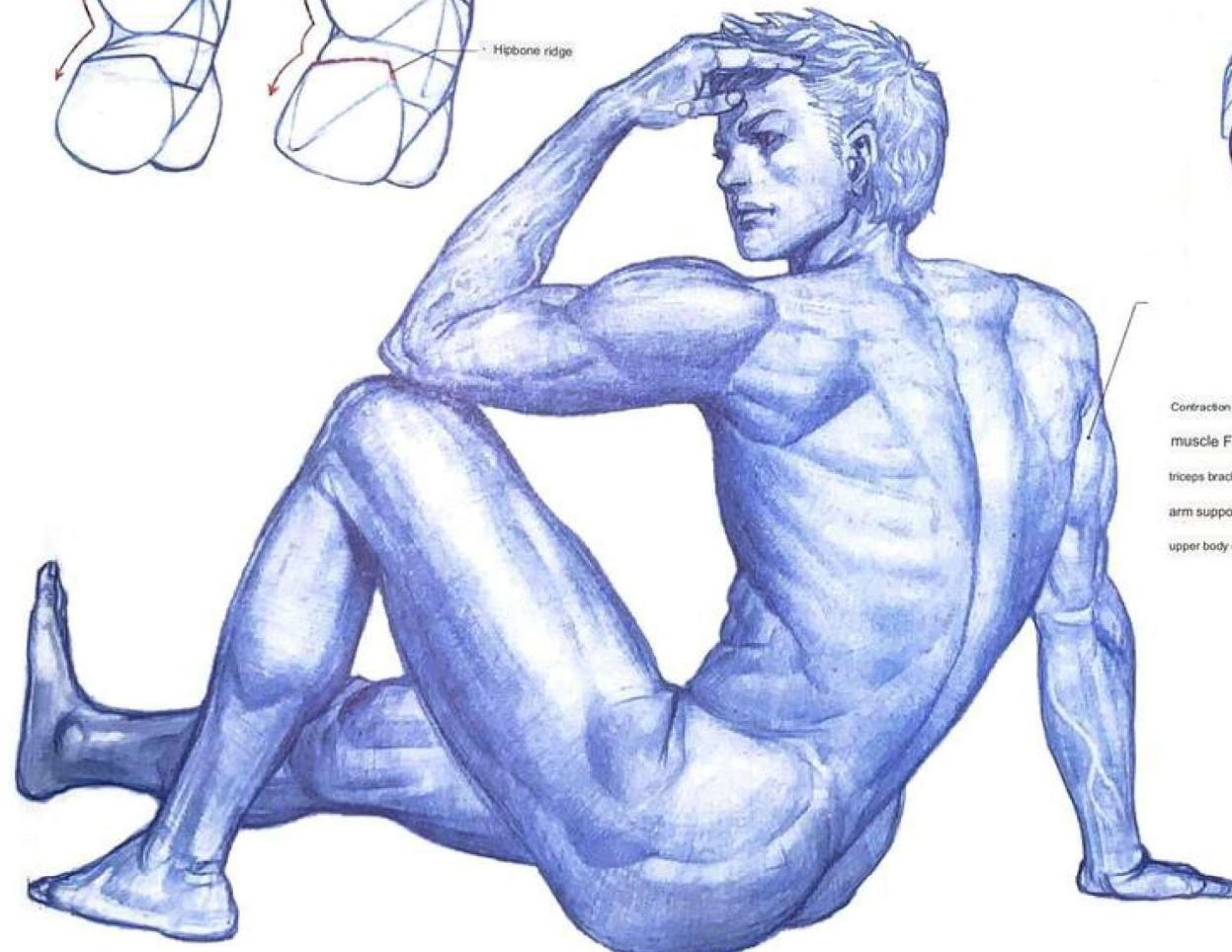
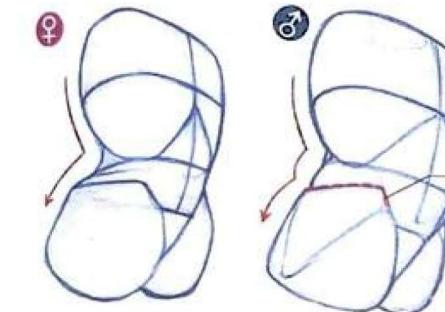
Difference in flow between men and women who bend at the waist.

Unlike women, men have hip ridges on their waists.

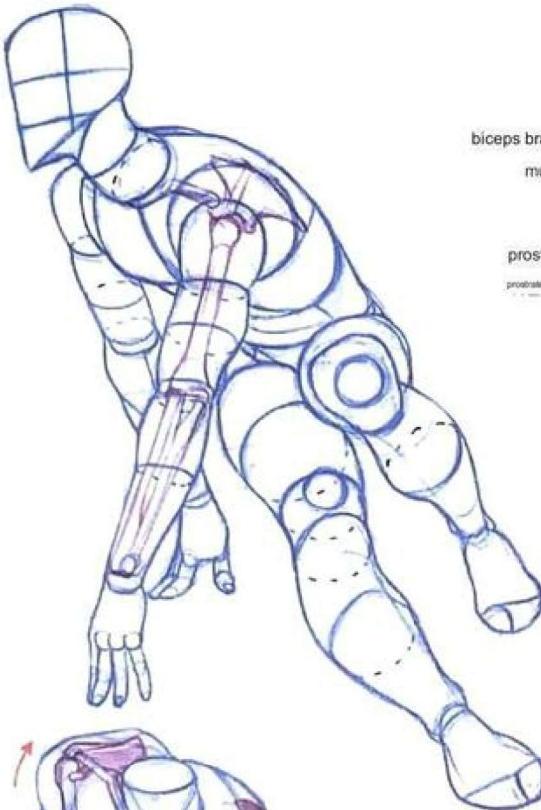
A line is created as a boundary. As a result, when a man bends at the waist, the flow changes twice around the point where the ribs end and the iliac crest, and the flow changes once around the point where the ribs end for women.



Let's observe the slope of the shoulder and pelvis from a high angle, which was not visible from the side.



■ Sitting posture with the upper body turned to the side

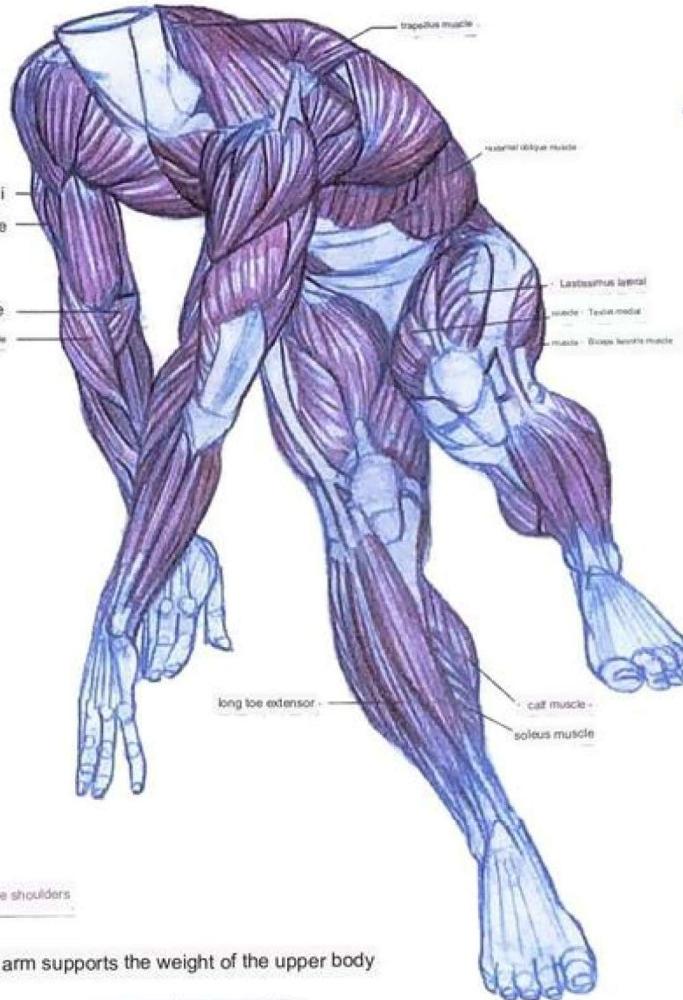


position of the shoulders

The right arm supports the weight of the upper body and the left arm serves as balance. The weighted right shoulder is raised, and the left shoulder is pulled along the outstretched arm.

Observe the appearance of both shoulder blades located asymmetrically.

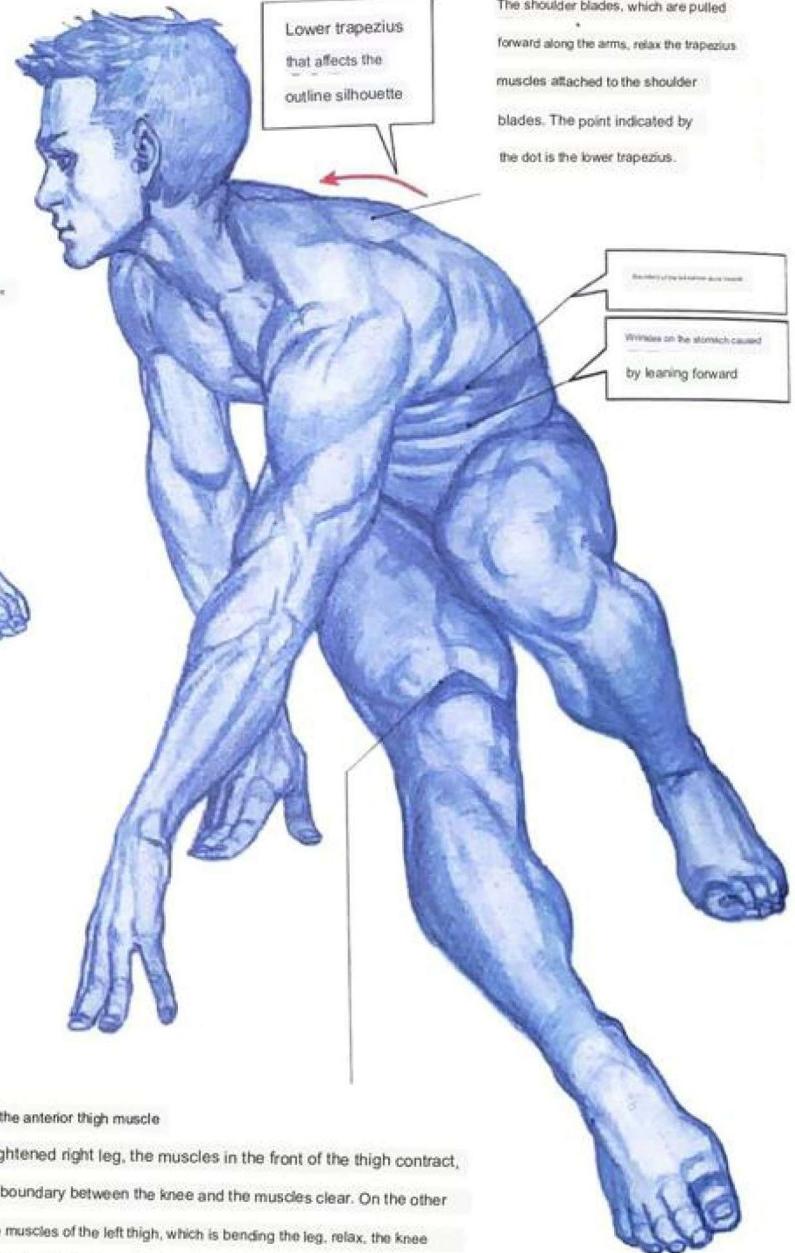
The proportion of weight supported by the arm



Lower trapezius that affects the outline silhouette

Trapezoid muscle that forms the silhouette  
The shoulder blades, which are pulled forward along the arms, relax the trapezius muscles attached to the shoulder blades. The point indicated by the dot is the lower trapezius.

Outline of the shoulder blade muscle  
Wrinkles on the stomach caused by leaning forward



End line of the anterior thigh muscle

In the straightened right leg, the muscles in the front of the thigh contract, making the boundary between the knee and the muscles clear. On the other hand, as the muscles of the left thigh, which is bending the leg, relax, the knee area is connected to the knee in a circular flow.





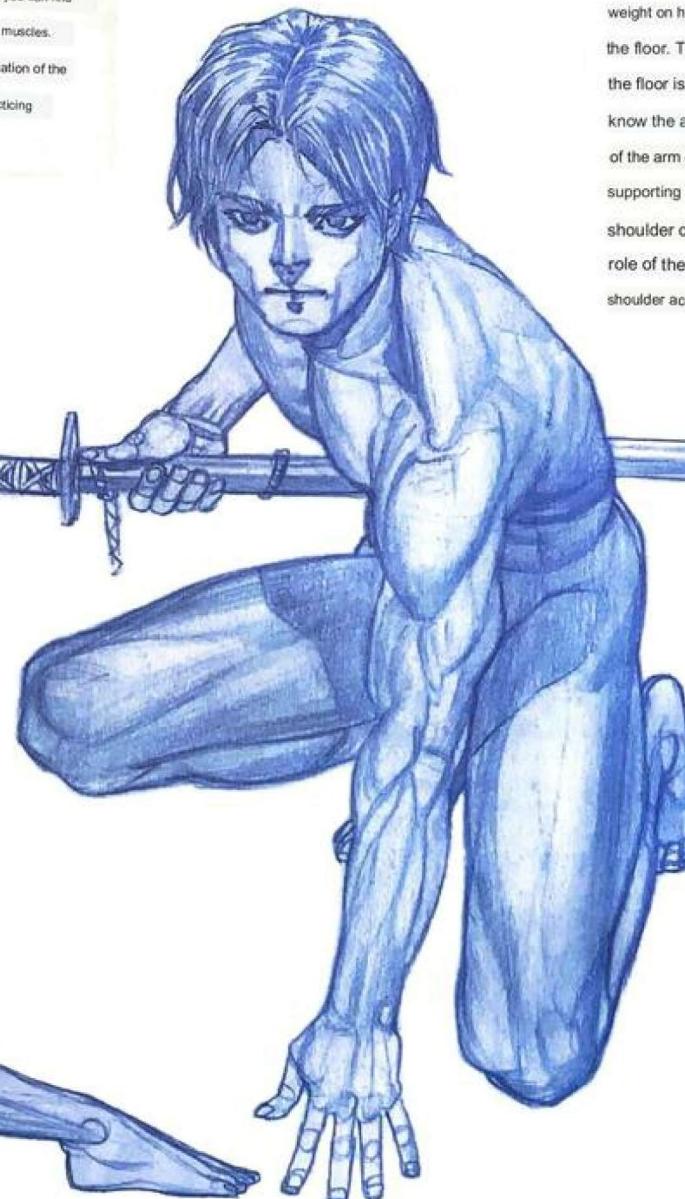
## Analyzing posture from the side\*

This picture is an angle of the posture of the left page viewed from the side, and the difference in inclination of both shoulders can be seen at a glance. The right arm with the raised shoulder acts as a support, and the left arm with the lowered shoulder balances rather than supports the weight. Therefore, the left arm does not affect the center of gravity even if it is not on the floor. In the case of the lower body, the bent left leg supports the weight, and the extended right leg holds the center.



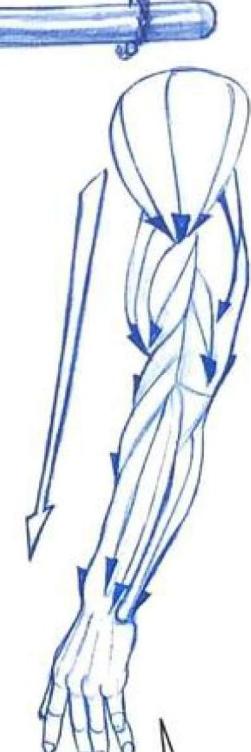
## \* Points when drawing the back From

this angle, where you can observe the entire back muscles, you can find the location of the shoulder bones through the shape of the muscles. In order to draw the back well, you need to know the location of the shoulder blades where the muscles attach, rather than practicing the flow of the muscles that are revealed on the surface.



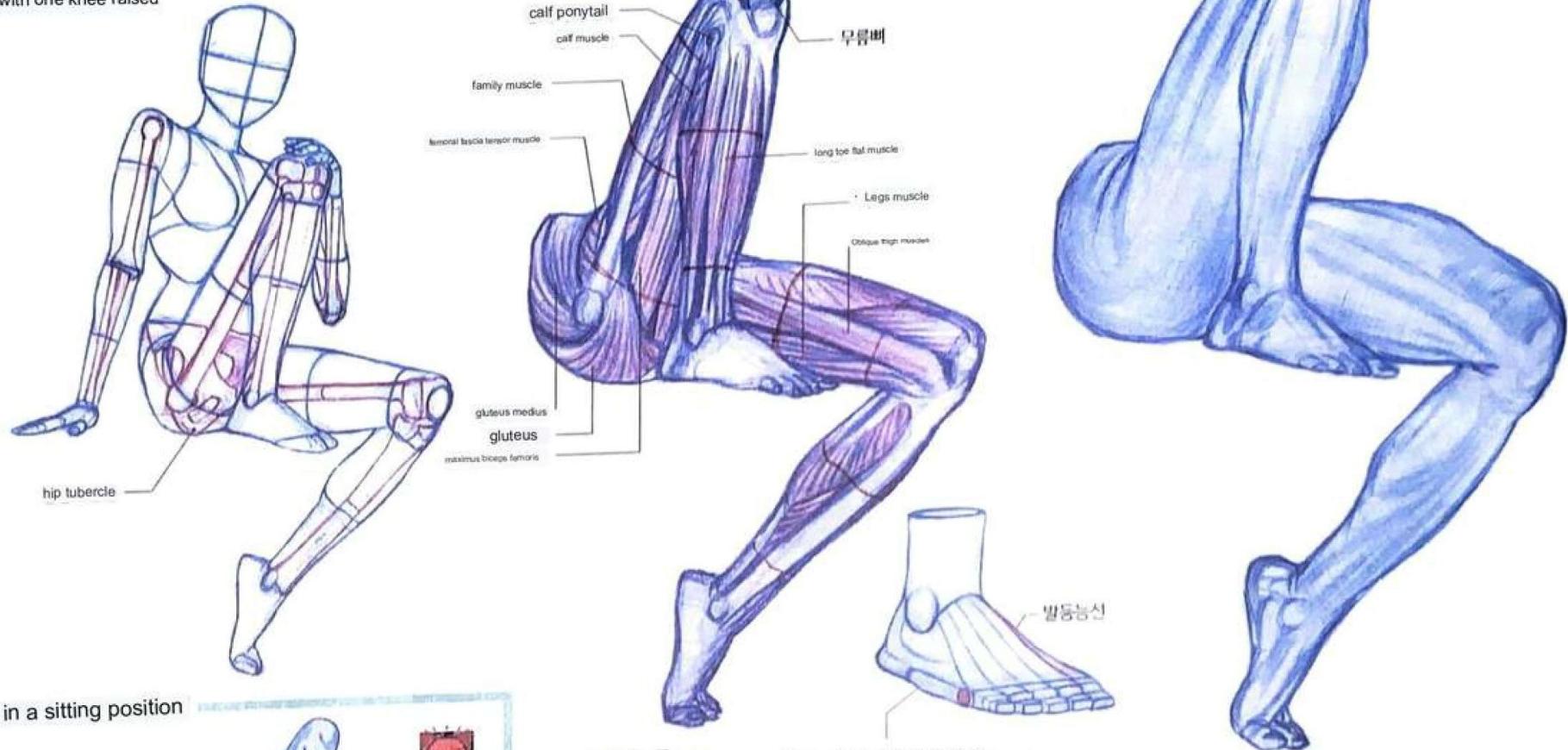
## \*The role of the arm according to the shoulder position

The figure on the left supports the weight on his legs and balances on his arms on the floor. The shoulder of the arm resting on the floor is pulled forward, so you know the arm is balancing. If the shoulder of the arm on the floor is raised, it is supporting the weight. Since the position of the shoulder changes depending on the role of the arm, you must position the shoulder according to your intended posture.



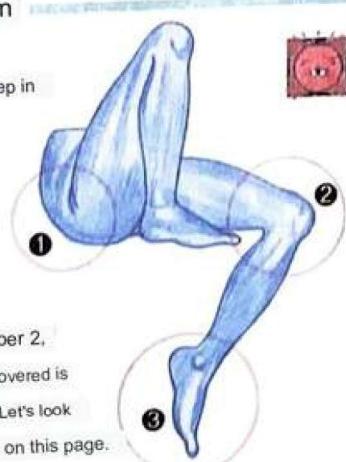
flow of untwisted arm muscles

■ Sitting position with one knee raised



Leg shape in a sitting position

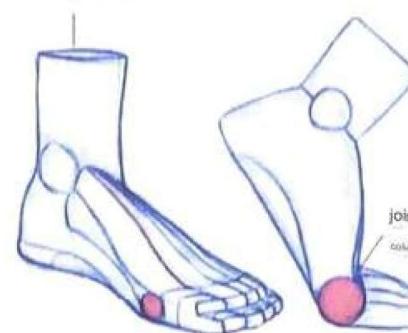
As in #1, if you draw the creases too deep in the folds when the legs are bent, the joints will look weak. Answer 2 is the opposite of mistake 1, and is an incorrect answer caused by not adding creases where they should be. There are no creases on the back of the knee, so it feels like rubber. As in number 2, drawing one toe so that all other toes are covered is a mistake that is often found by beginners. Let's look at the diagram of the structure of the foot on this page.



"It would be nice if the feet looked like this so that it would be easier to draw..."

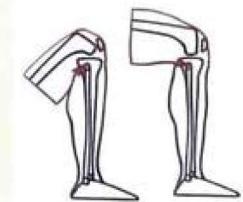


Shape your foot and figure out its structure around the instep ridge.

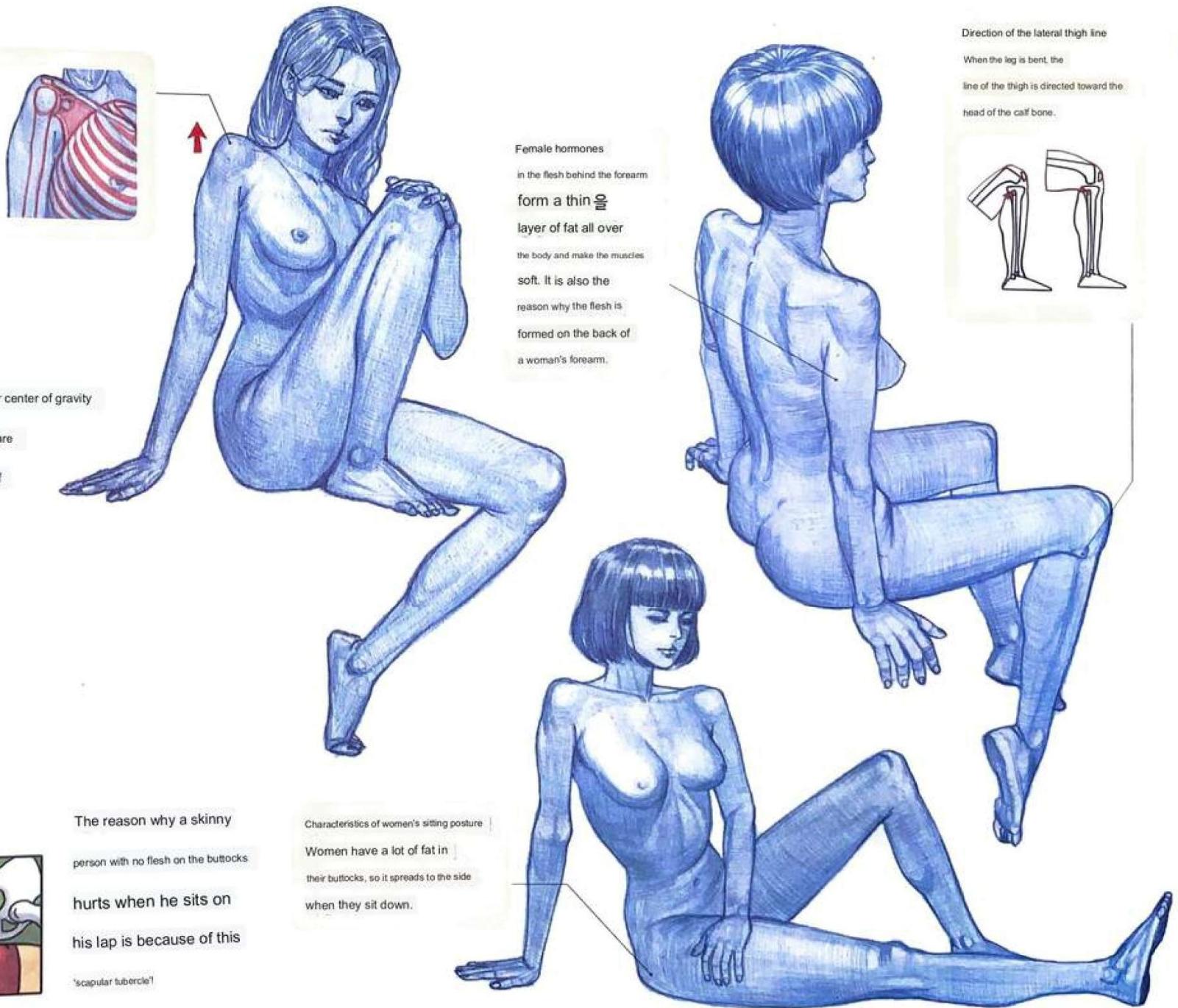


Understanding the basic shape and movement of the foot To understand the overall shape of the foot, think of the foot wearing socks, not bare feet. Once you have become accustomed to the flow of socks to some extent, refine the shape little by little by dividing angles around the instep ridge as shown in the picture on the left. After tying all five toes together, start by moving up and down around the joint pillar.

Direction of the lateral thigh line  
When the leg is bent, the line of the thigh is directed toward the head of the calf bone.



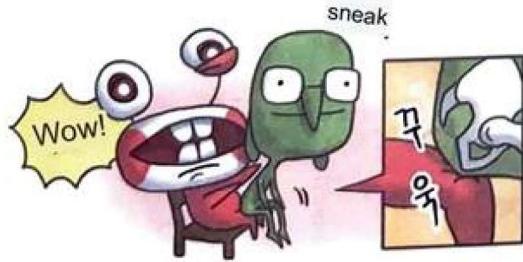
Female hormones in the flesh behind the forearm form a thin 옥 layer of fat all over the body and make the muscles soft. It is also the reason why the flesh is formed on the back of a woman's forearm.



#### Center of gravity in sitting position

When you sit on your butt, it is relatively easier to balance your center of gravity

because the area in contact with the floor is wider than when you are standing on your feet. As shown in the picture on the right, if you place your arm on the floor, the shoulder on the side you are carrying the weight on should go up. Observe the position of the shoulders through the pictures on this page.



The reason why a skinny person with no flesh on the buttocks hurts when he sits on his lap is because of this 'scapular tubercle'

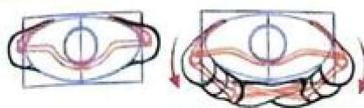
Characteristics of women's sitting posture  
Women have a lot of fat in their buttocks, so it spreads to the side when they sit down.

■ Legs and arms crossed posture

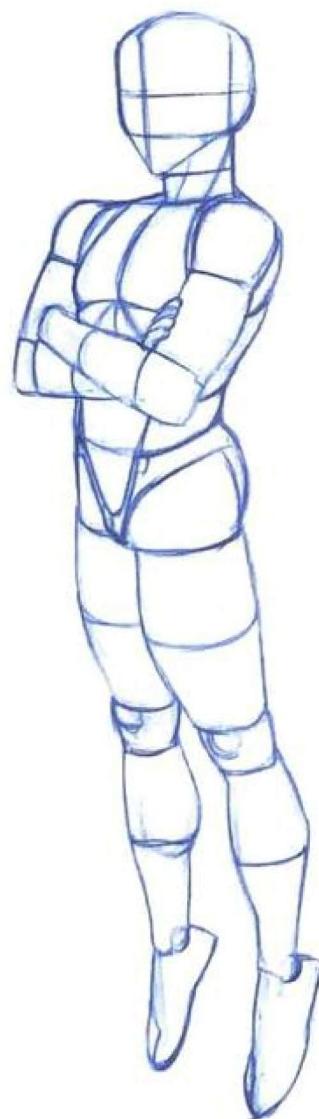


Attention posture

crossed arms



When you cross your arms, not only your arms move, but your shoulders come forward as shown in the picture above.



A form in which the arms are pressed close to the body and the flesh overlaps

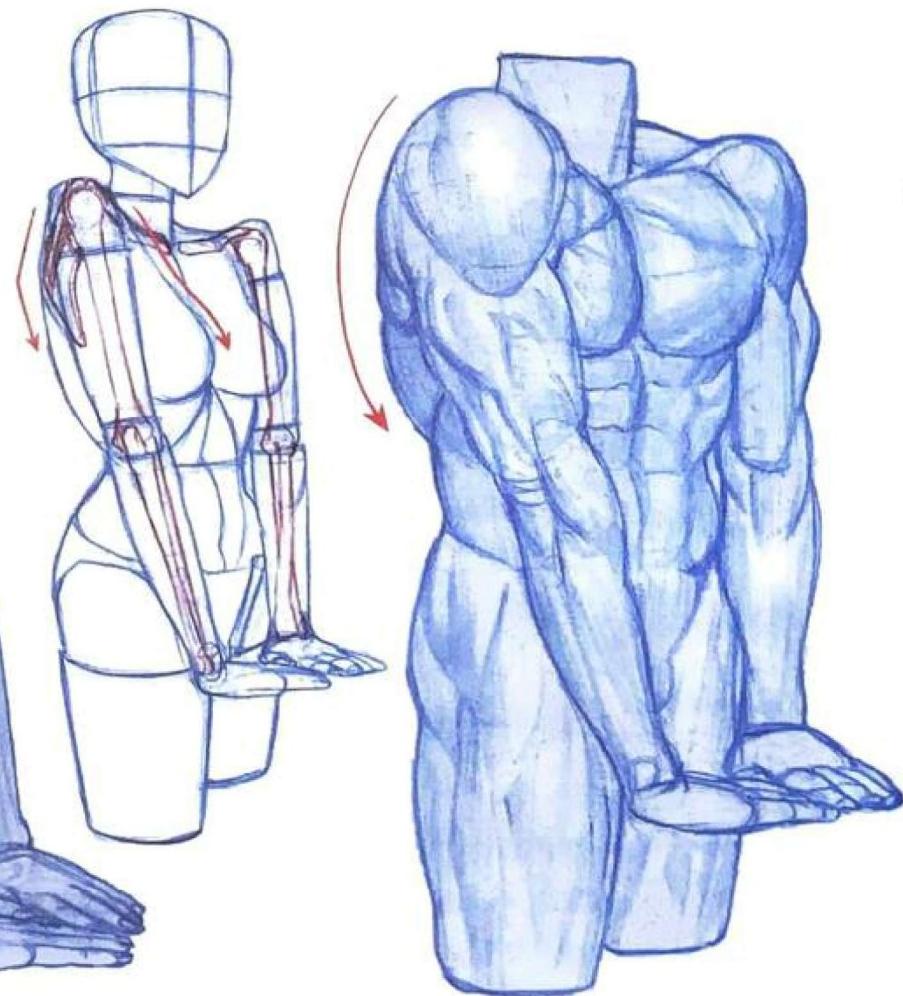
If you look at the posture with the shoulders raised from the side, the flow of the breasts flows down

from the shoulders in women, and the thickness of the contracted pectoralis major muscle stands out in

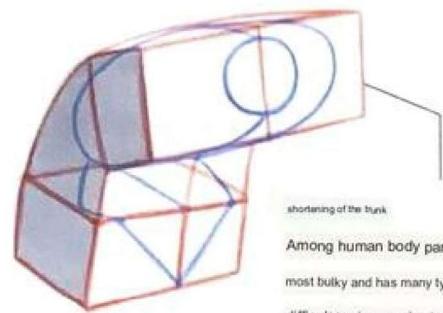
men, and the boundary between the deltoid muscle and the pectoralis major muscle is divided.

In women, the protruding shoulder blades affect the flow of the back, and in men, the

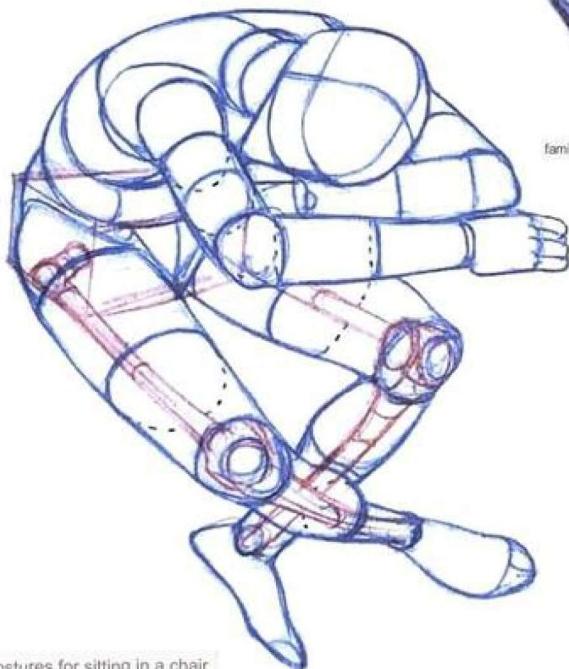
large teres muscle and the broad roundness create the flow of the back.



■ Sitting posture in a chair



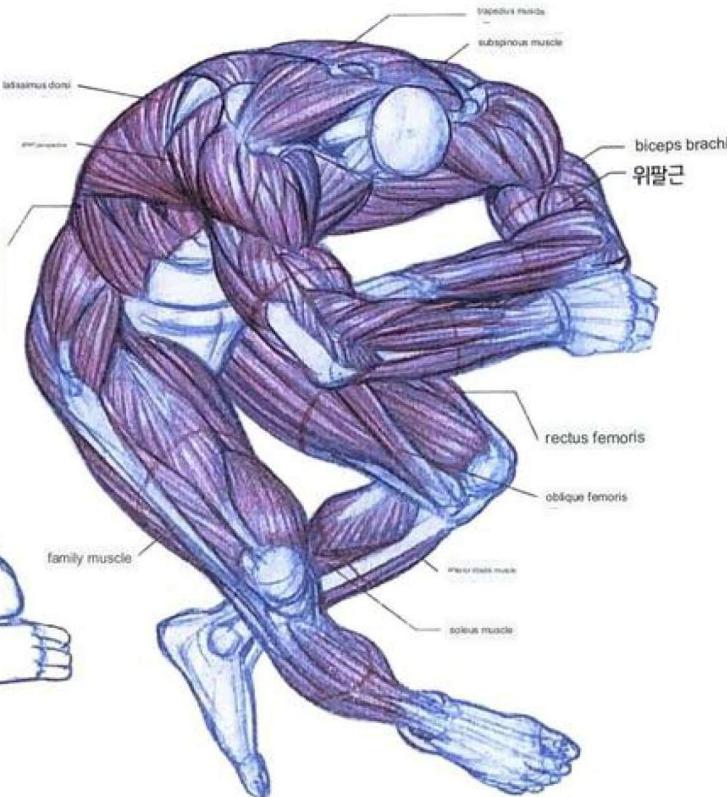
shortening of the trunk  
Among human body parts, the torso is the most bulky and has many types of muscles, so it is difficult to draw a shortened figure.



Two postures for sitting in a chair

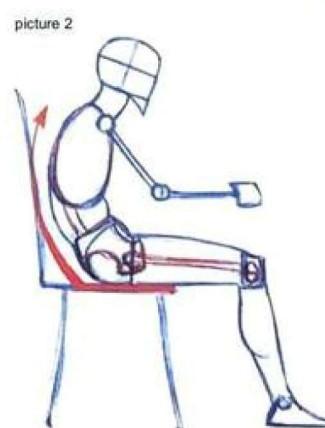
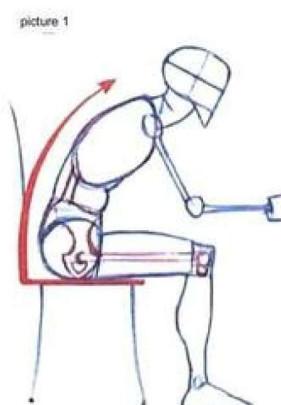
Figure 1 shows the same flow as the postures on this page, where you sit with your arms resting on a desk with your back bent forward.

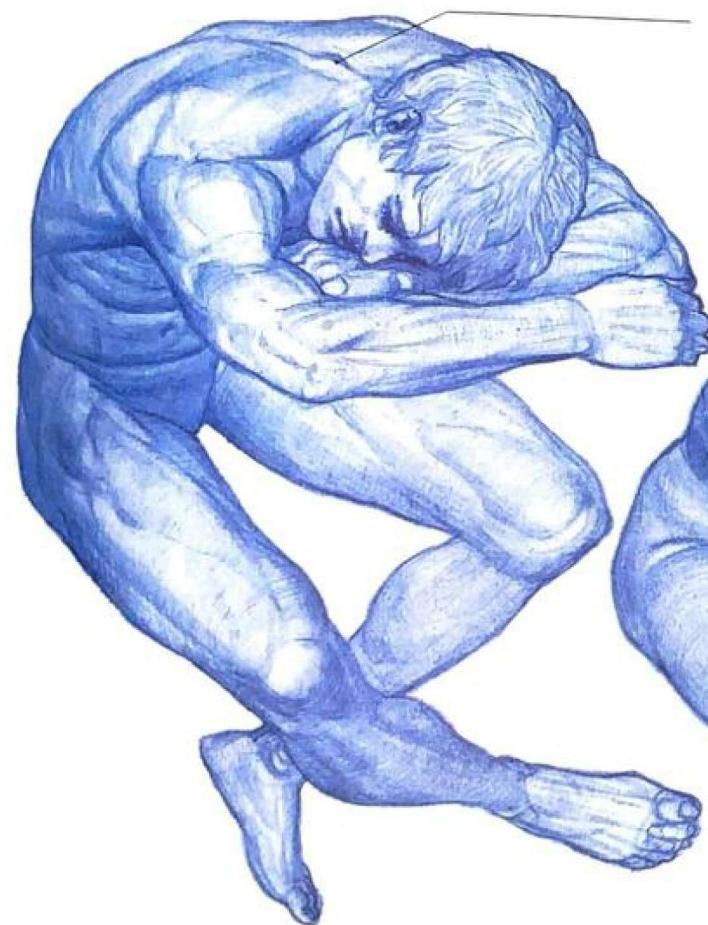
Figure 2 shows a sitting posture with the hips forward and the back leaning against the back of a chair. There are two main ways to sit on a chair.



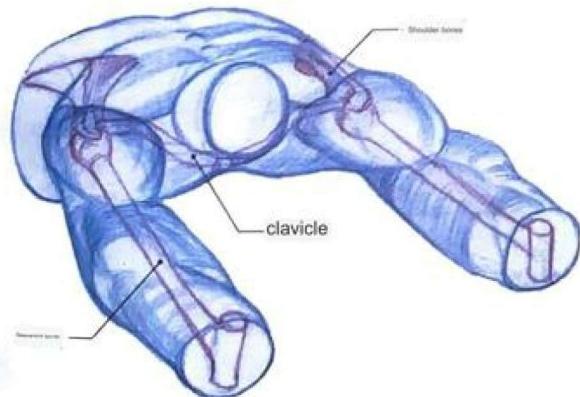
of the waist as shown in Figure 1.

It is a sitting position in a line.



**bones that affect body flow**

In both men and women, when the back is bent than when the back is upright, the back muscles relax and the spinal protrusion around the 7th cervical vertebra becomes prominent. In particular, the bumps of women with less muscle mass look more prominent.

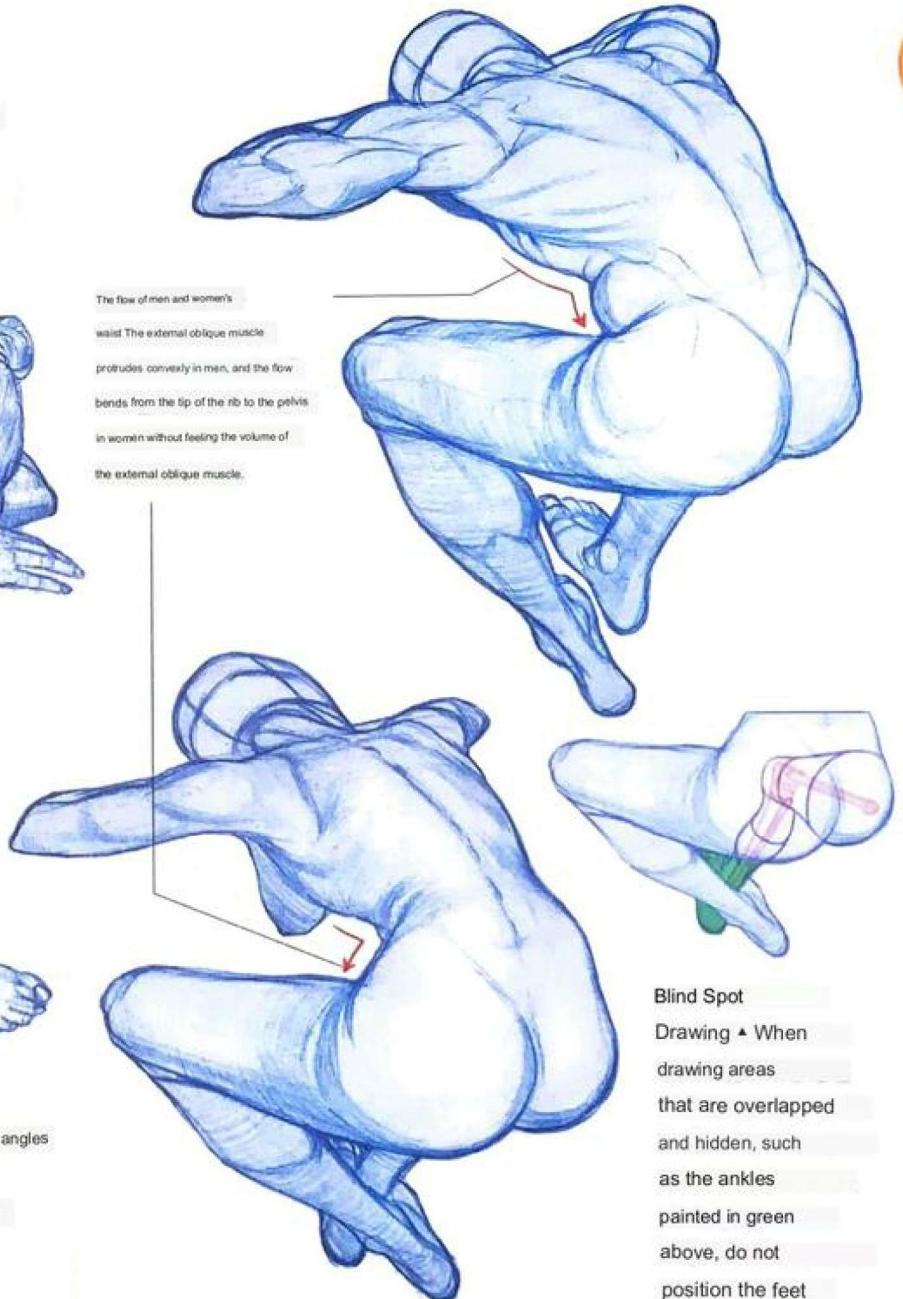


## • Drawing by dividing proportion and volume

An angle like the one on the left is really difficult to draw. For postures or angles that are difficult to draw, first draw the skeleton, calculate the posture and proportions, and apply the volume and flow of the muscles on top to complete it. In this way, complex structures can be expressed more easily by separately calculating proportion and volume.

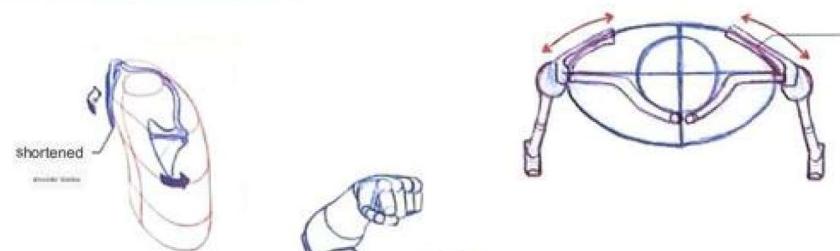


The flow of men and women's waist. The external oblique muscle protrudes convexly in men, and the flow bends from the tip of the rib to the pelvis in women without feeling the volume of the external oblique muscle.

**Blind Spot**

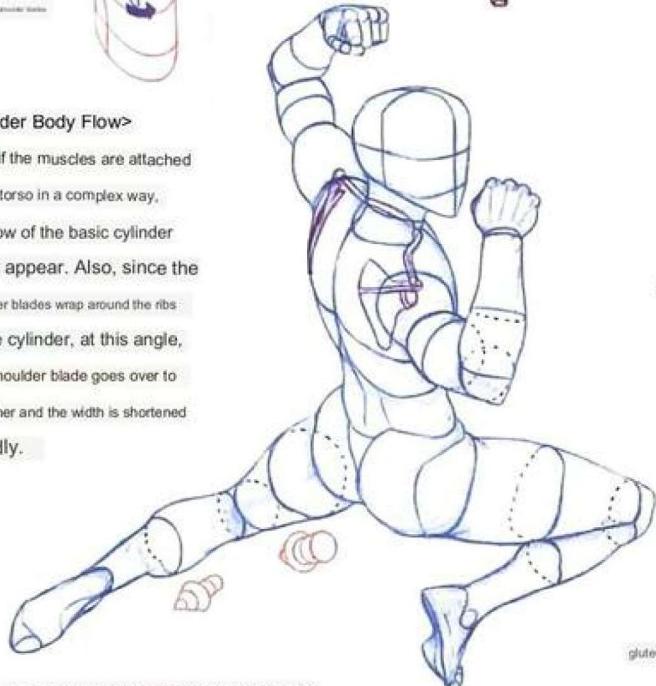
Drawing ▲ When drawing areas that are overlapped and hidden, such as the ankles painted in green above, do not position the feet by intuition.

■ A posture that emphasizes upper body muscles



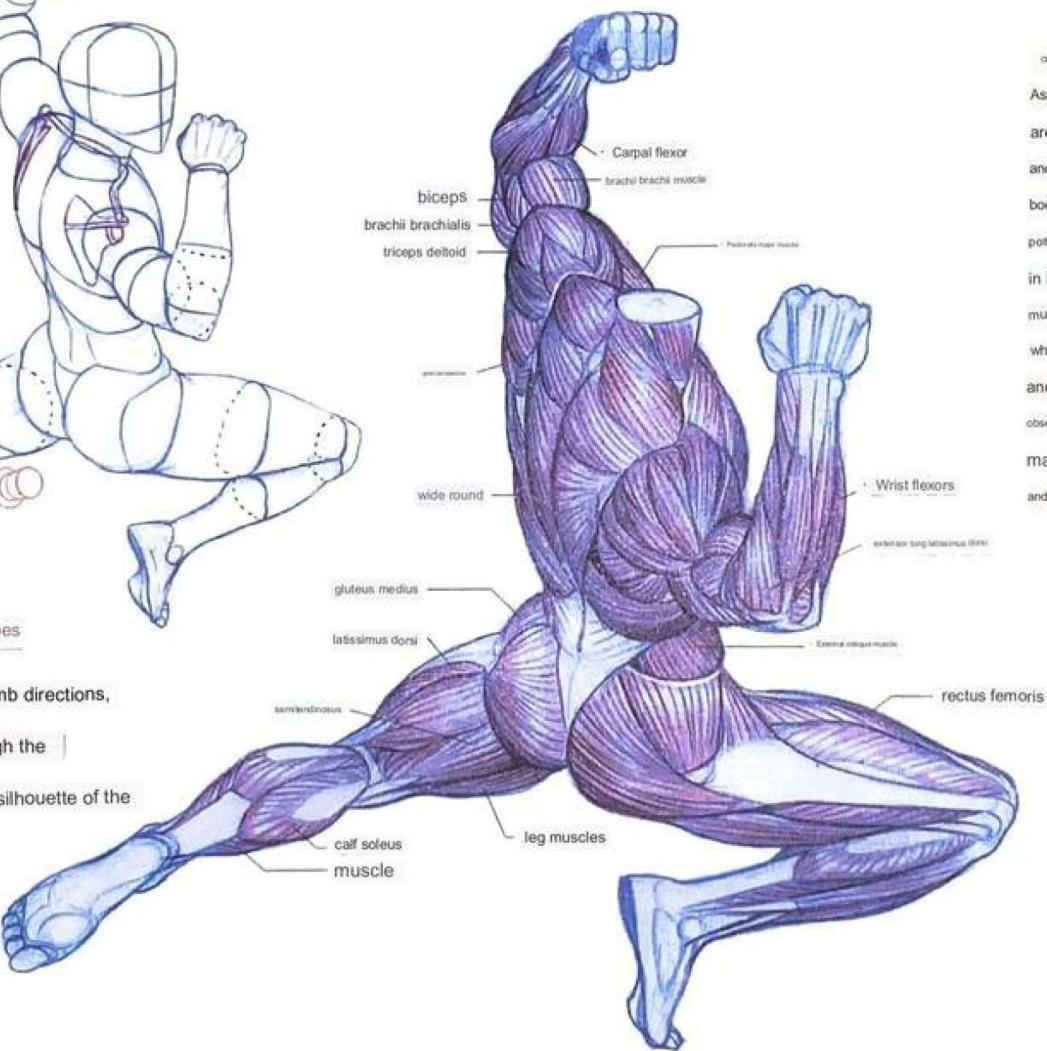
#### Cylinder Body Flow>

Even if the muscles are attached to the torso in a complex way, the flow of the basic cylinder must appear. Also, since the shoulder blades wrap around the ribs of the cylinder, at this angle, one shoulder blade goes over to the other and the width is shortened rapidly.

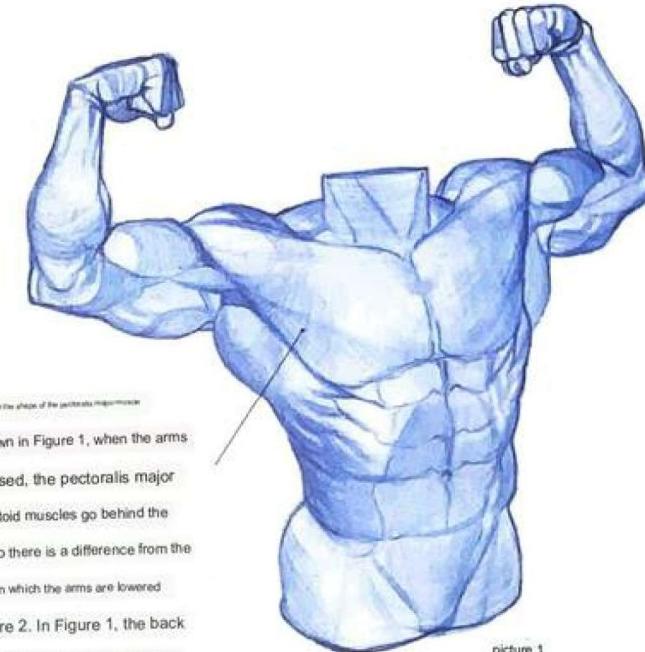


#### Recognizing the direction of limbs with shapes

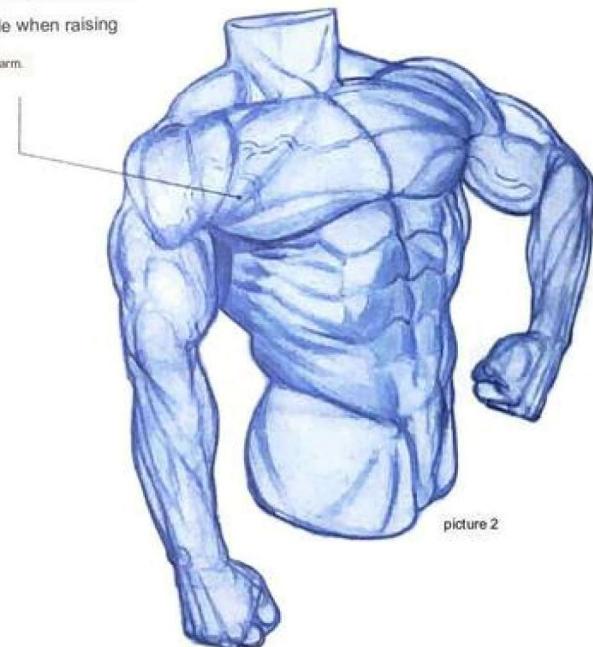
When drawing a pose with complicated limb directions, first draw the direction of each part through the parabola of the figure before drawing the silhouette of the human body. In this posture, it is especially important that the posture of both arms be symmetrical.



The inner side of the shoulder blade is not flat because the inner side of the shoulder blade has to wrap around the ribs, which are elliptical, so it is a curved surface rather than a flat surface.



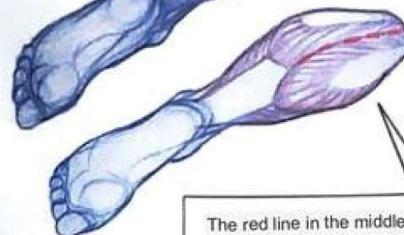
picture 1



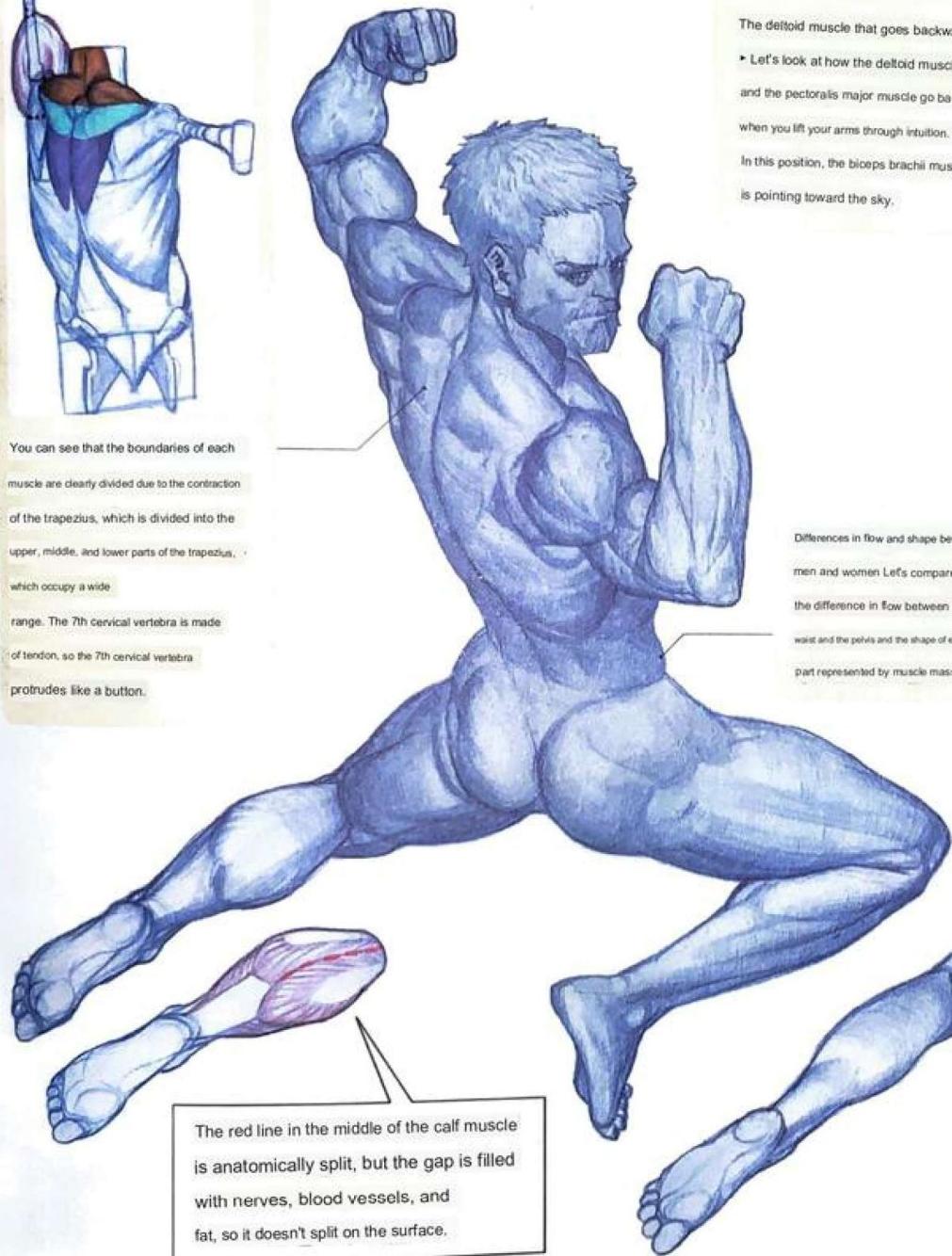
picture 2



You can see that the boundaries of each muscle are clearly divided due to the contraction of the trapezius, which is divided into the upper, middle, and lower parts of the trapezius, which occupy a wide range. The 7th cervical vertebra is made of tendon, so the 7th cervical vertebra protrudes like a button.

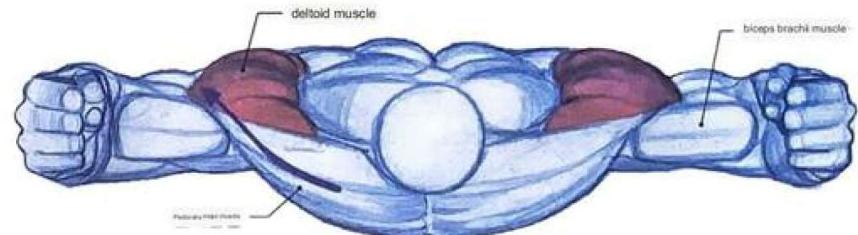


The red line in the middle of the calf muscle is anatomically split, but the gap is filled with nerves, blood vessels, and fat, so it doesn't split on the surface.

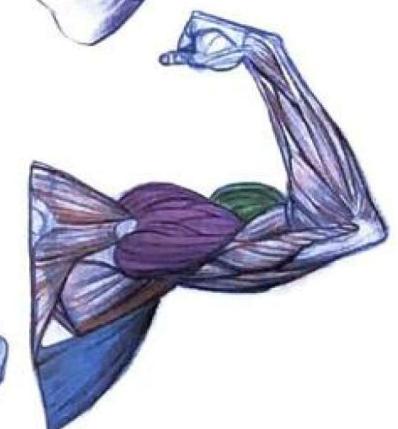
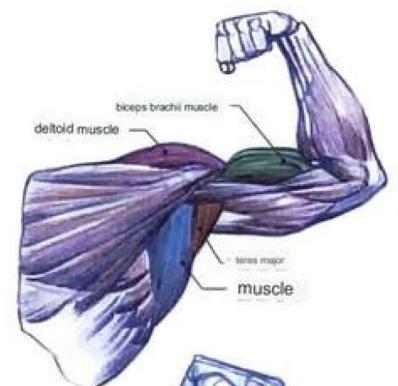


#### The deltoid muscle that goes backward

Let's look at how the deltoid muscle and the pectoralis major muscle go backward when you lift your arms through intuition. In this position, the biceps brachii muscle is pointing toward the sky.



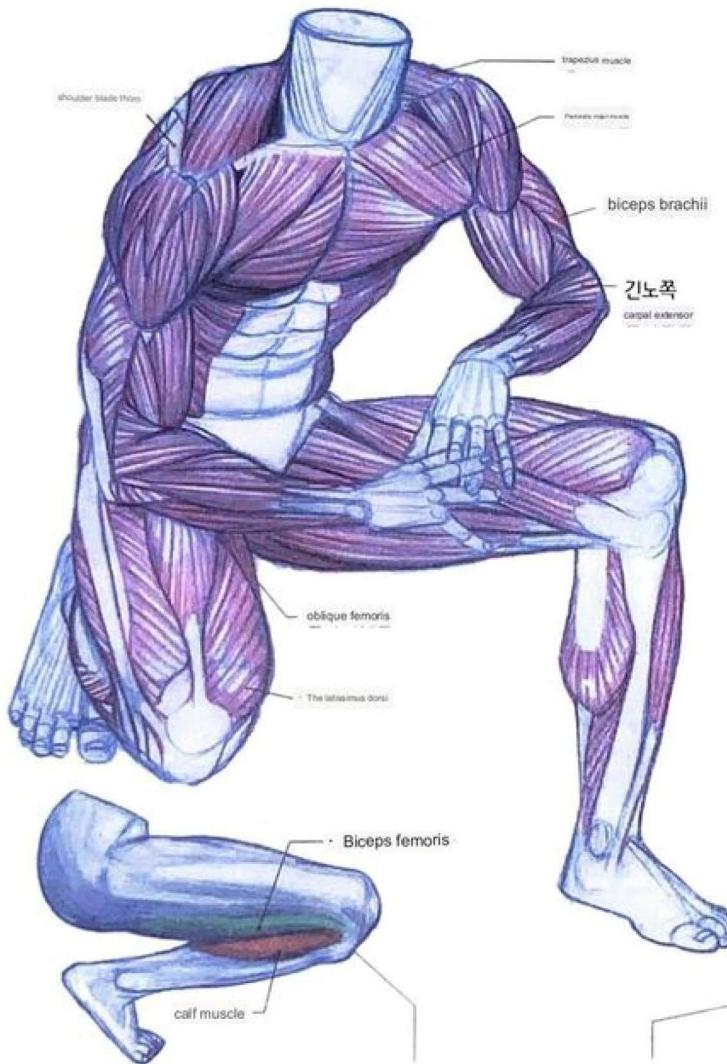
**Tilt of a woman's chest** A woman's chest should always maintain the same tilt as her torso.



#### muscle anterior relationship

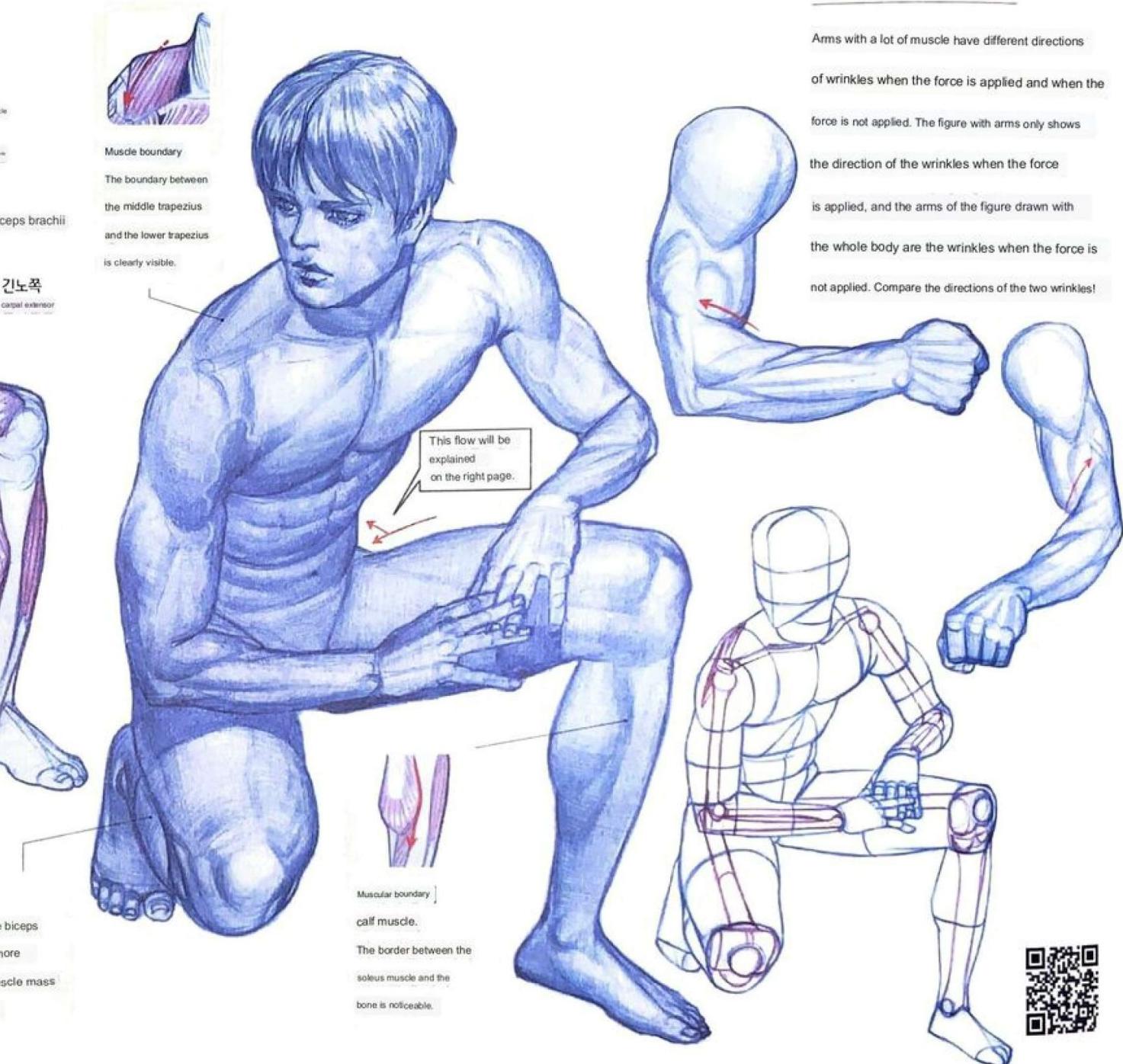
As in the picture above, let's observe the same muscles from the front and back by color-coding them.

## ■ Squatting posture with one knee raised (1)

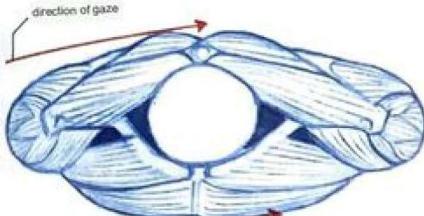


### Characteristics of bent legs

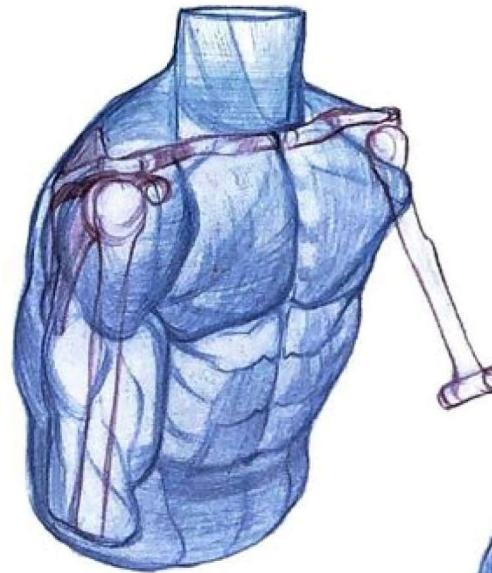
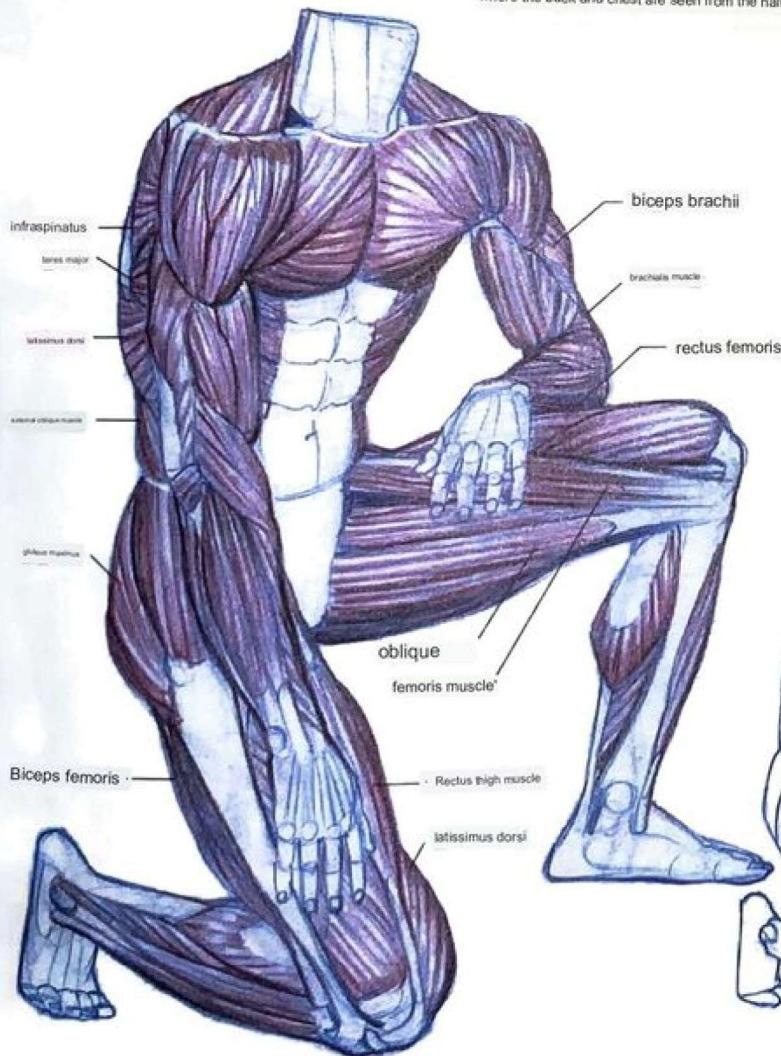
When the leg is flexed, the boundary between the muscles that the biceps femoris and calf muscles are pressed is revealed. You can see it more clearly when you look at it from the side. Women have less muscle mass and a layer of fat over it, so the boundaries are not as clear as men.



## ■ Squatting posture with one knee raised (2)



The angle at which the back and chest are visible at the same time. Commonly thinking of dividing the body into front and back parts, you may mistakenly think that you cannot see both sides at the same time. However, since the torso is generally round, an angle is created where the back and chest are seen from the half side.

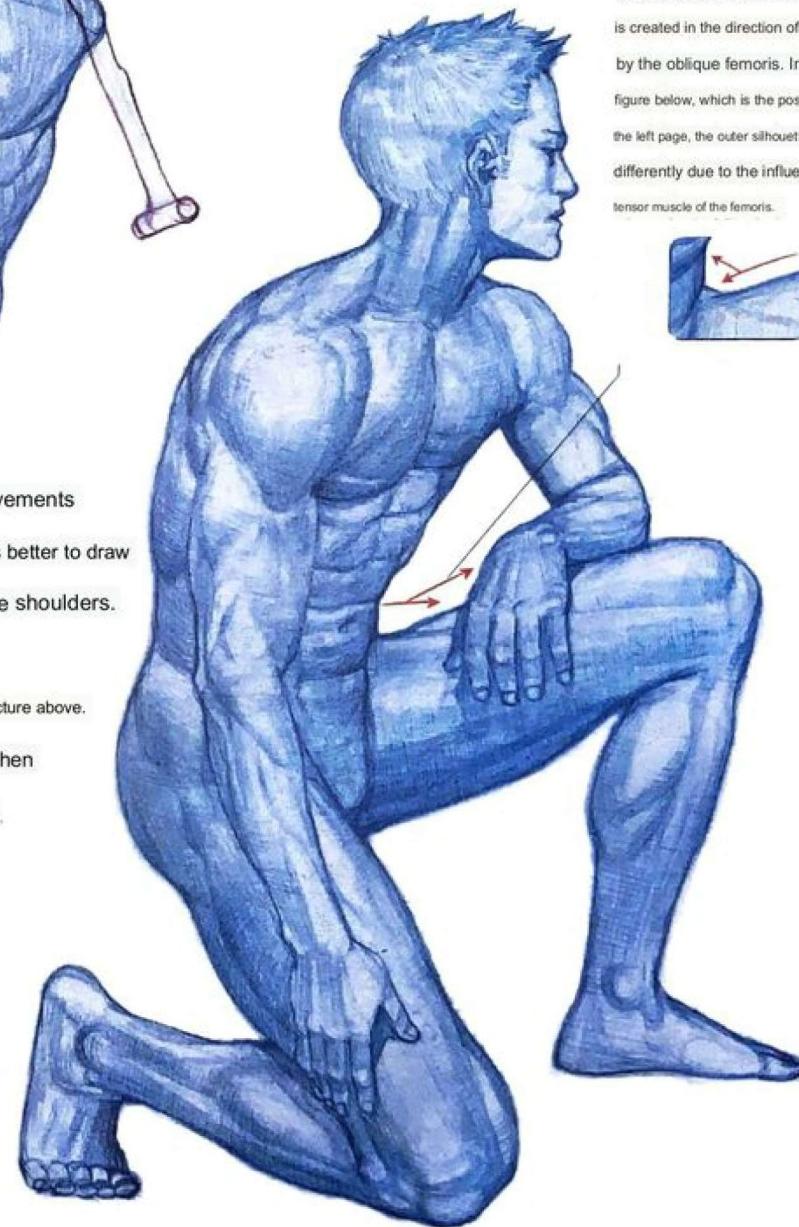
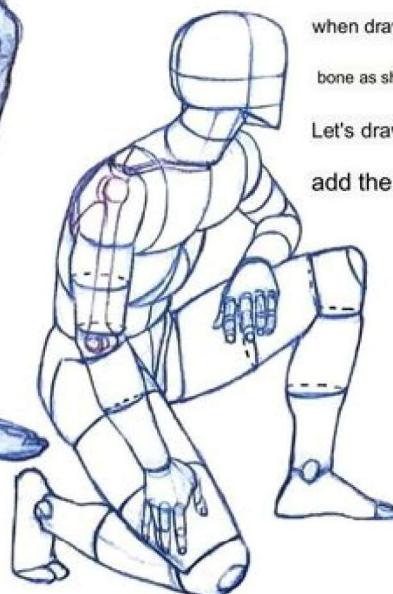


Draw different shoulder positions

To express various shoulder movements

Instead of drawing the arms first, it is better to draw the torso first and then position the shoulders.

when drawing arms  
bone as shown in the picture above.  
Let's draw first and then  
add the muscles..



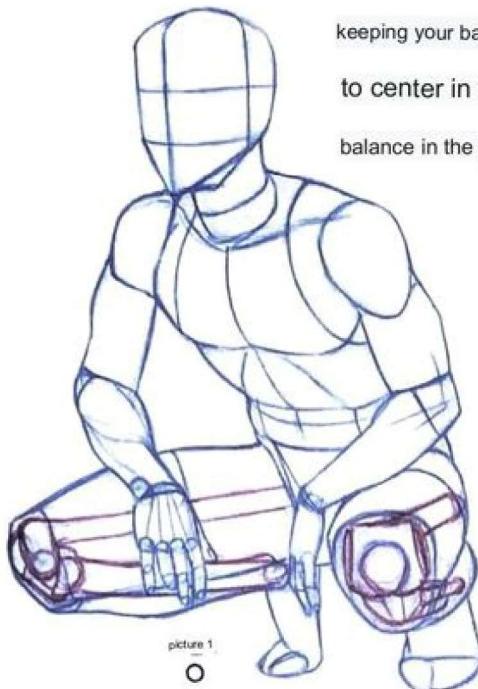
Variation of flow according to angle

The flow of muscles where the pelvis and legs meet depends on the angle. In the picture on the left, flow is created in the direction of the arrow by the oblique femoris. In the figure below, which is the posture on the left page, the outer silhouette appears differently due to the influence of the tensor muscle of the femoris.



## ■ Sit on tiptoe (1)

difficult center of gravity

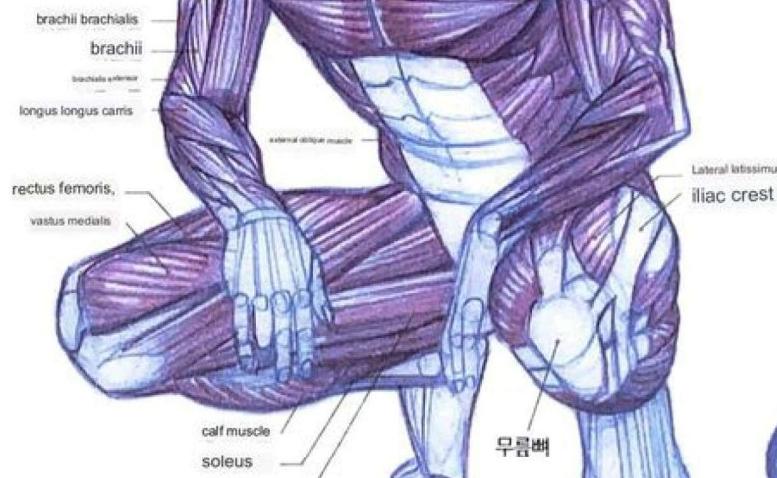


picture 1  
O



Figure 2  
X

Guys, sit on tiptoe. Are you having trouble keeping your balance? A posture that is difficult to center in real life is also difficult to balance in the picture.



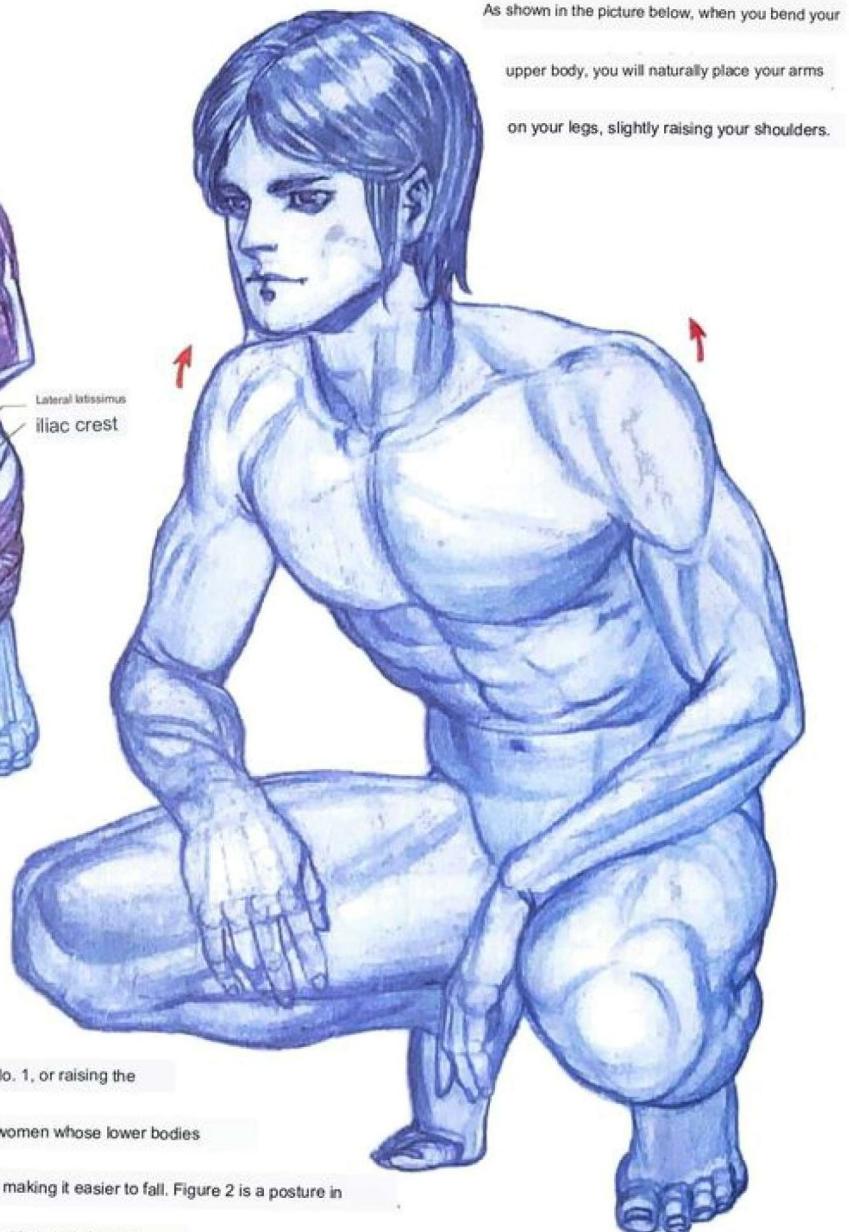
two squatting positions

The squatting posture is divided into two postures, such as lying down on the thighs and standing on tiptoe as in No. 1, or raising the thighs and attaching the entire sole to the floor as in No. 2. Posture 2 is a difficult pose for men to perform. Unlike women whose lower bodies are heavier than their upper bodies, men's upper bodies are heavier, so the center of gravity is leaned backwards, making it easier to fall. Figure 2 is a posture in which the center of gravity is incorrect due to the combination of the tip of the toe of number 1 and the slope of the thigh of number 2.



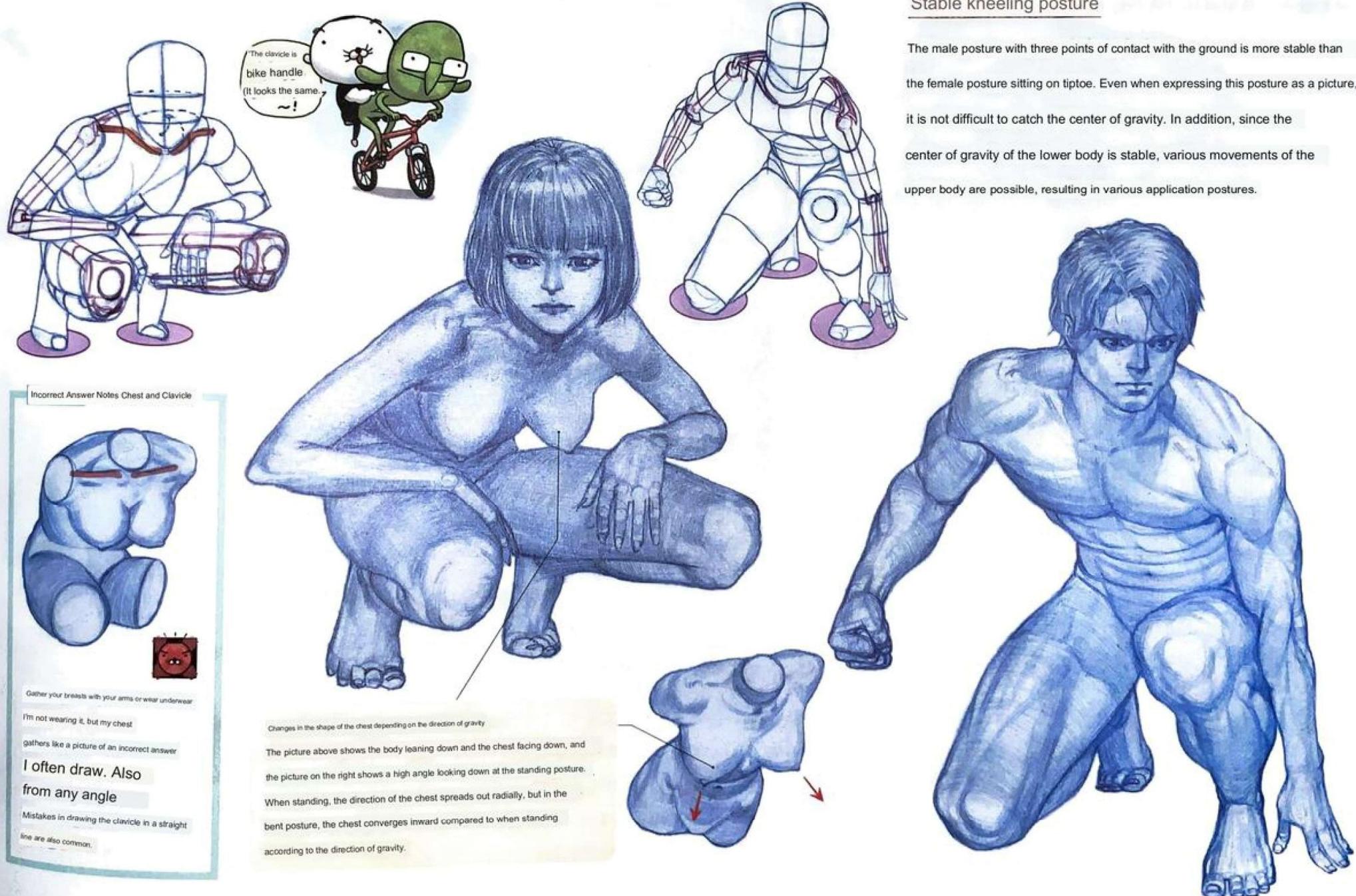
How to get a stable center of gravity

In the posture of squatting on tiptoe, bending over rather than erecting the upper body creates a stable center of gravity.



As shown in the picture below, when you bend your upper body, you will naturally place your arms on your legs, slightly raising your shoulders.

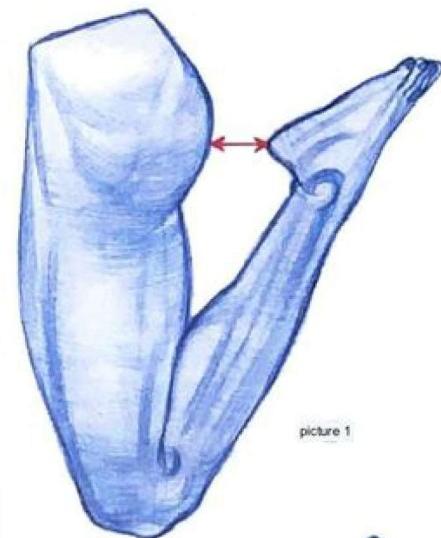
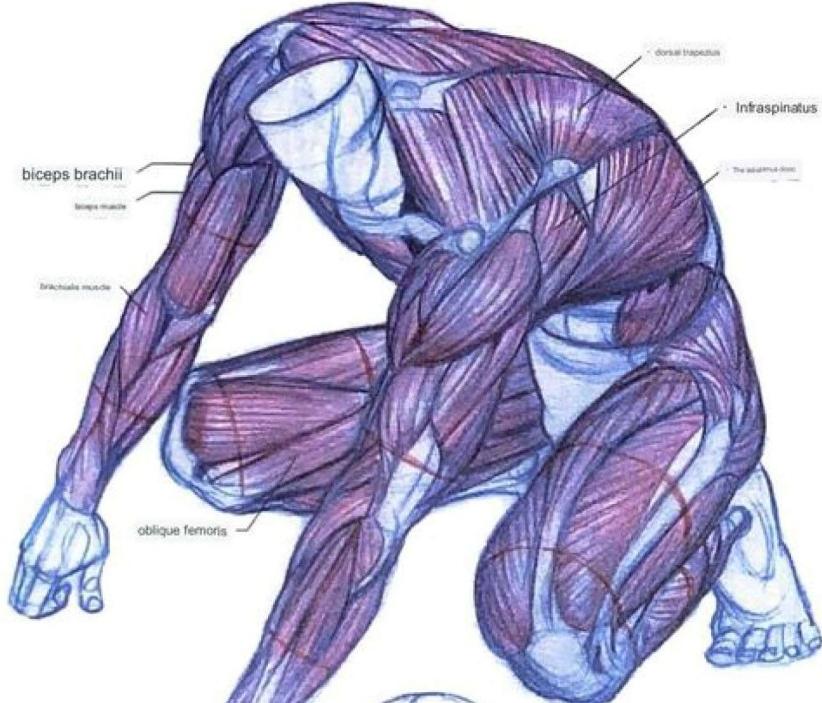
## ■ Sit on tiptoe (2)



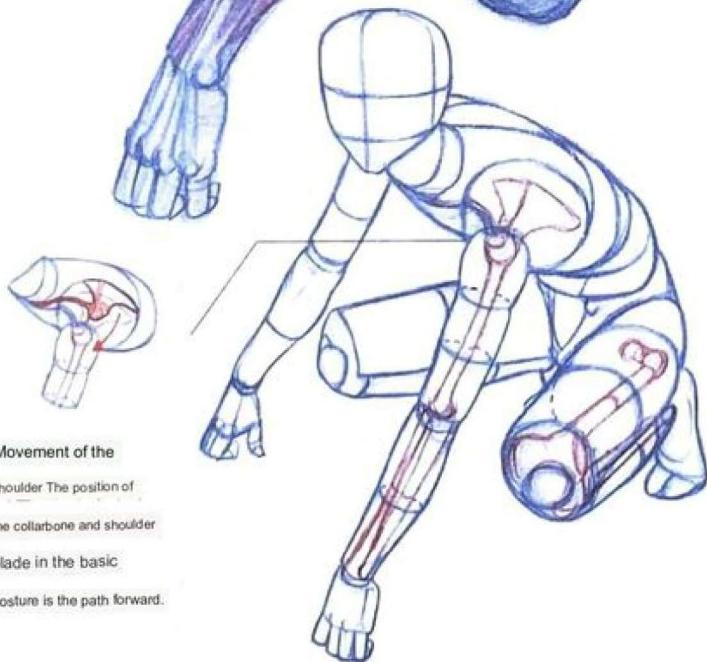
### Stable kneeling posture

The male posture with three points of contact with the ground is more stable than the female posture sitting on tiptoe. Even when expressing this posture as a picture, it is not difficult to catch the center of gravity. In addition, since the center of gravity of the lower body is stable, various movements of the upper body are possible, resulting in various application postures.

■ Squatting posture with hands on the floor



picture 1



Deformed character

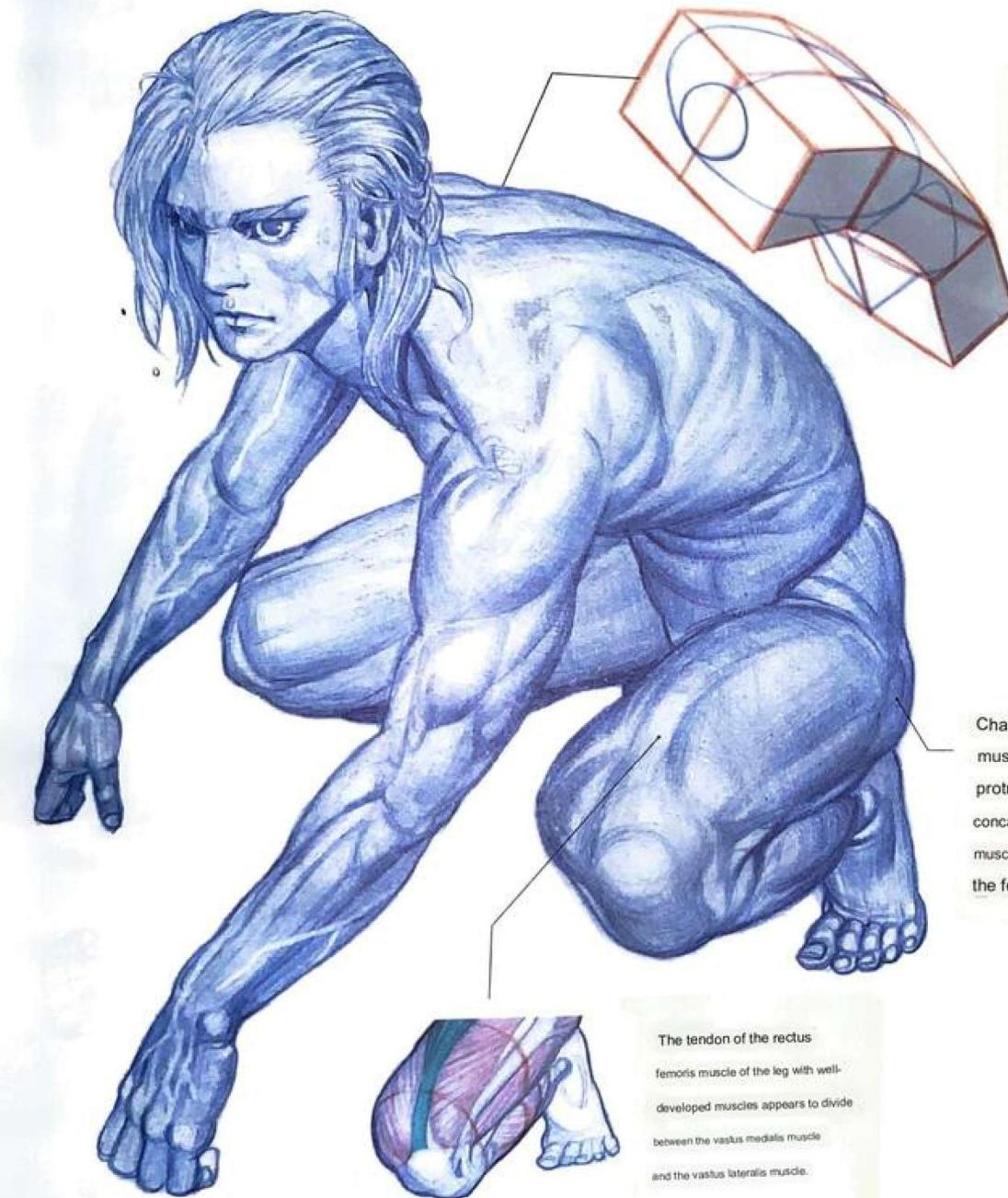
When drawing a large character with deformity, rather than a vague idea of simply exaggerating the size of the shoulders and upper body, a more specific shape will come out if you think of mixing it with an existing animal, such as a gorilla, similar to the concept you want to deform. As shown in the picture above, if you add the flow of the human body on top of the gorilla's skeleton, it will be easier to express the deformation in the dramatized body.



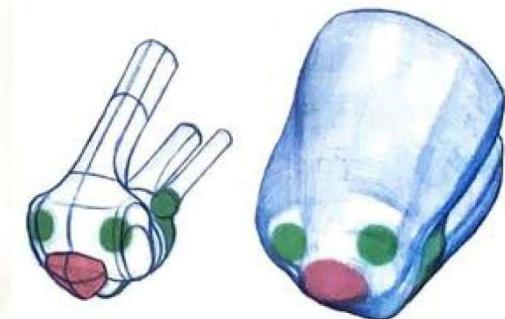
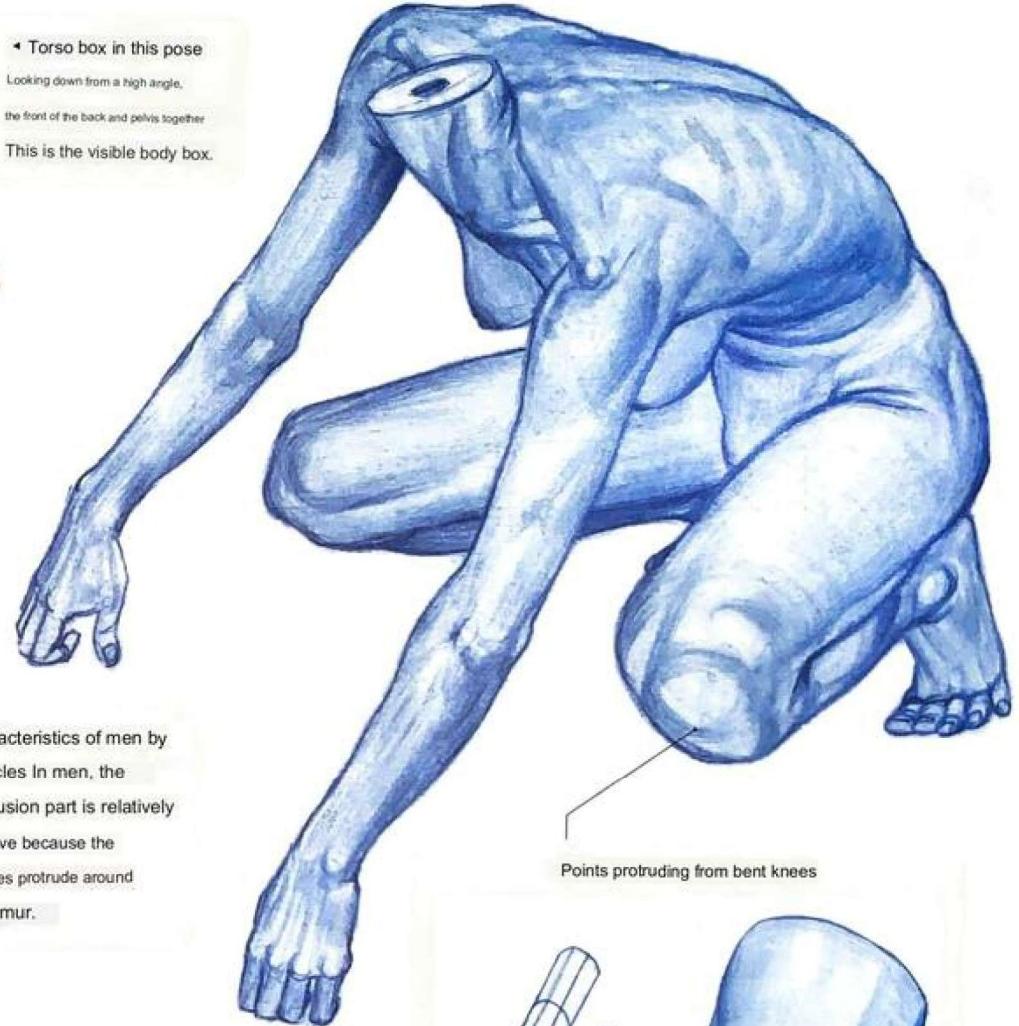
picture 2

Range of motion of the knee

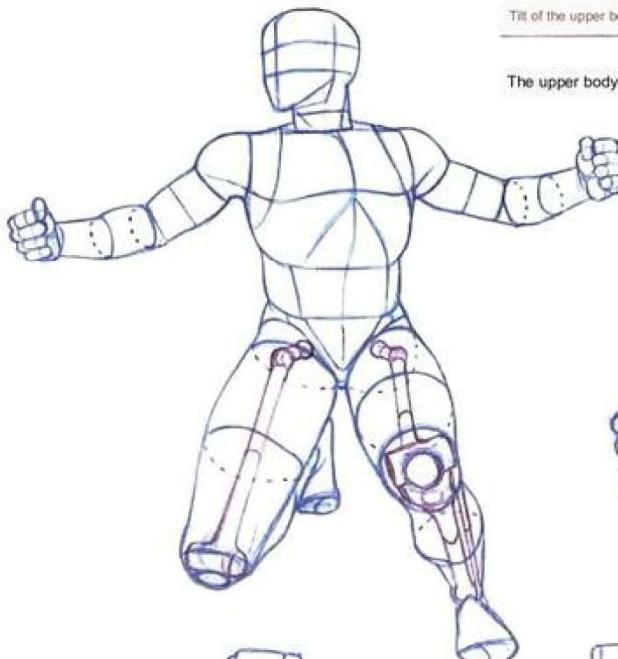
▲ Figure 1 shows the leg maximally bent only by the strength of the muscle itself. As shown in Figure 2, in order for the heel to reach the buttocks, you must either sit down with weight or grab the leg and pull it inward to the body.



• Torso box in this pose  
Looking down from a high angle,  
the front of the back and pelvis together  
This is the visible body box.



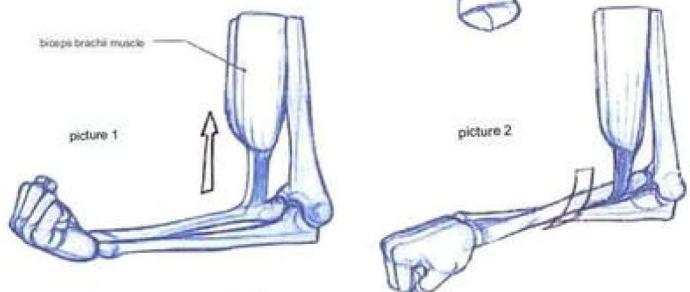
■ Sitting posture with arms wide open



Tilt of the upper body and trapezius muscles

The upper body is bent backwards, so the trapezius

The height looks low.



Hand direction and strength

As shown in Figure 1, the biceps brachii muscle

exerts the strongest force when the fist

is bent inward. As shown in Figure

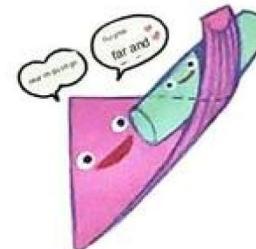
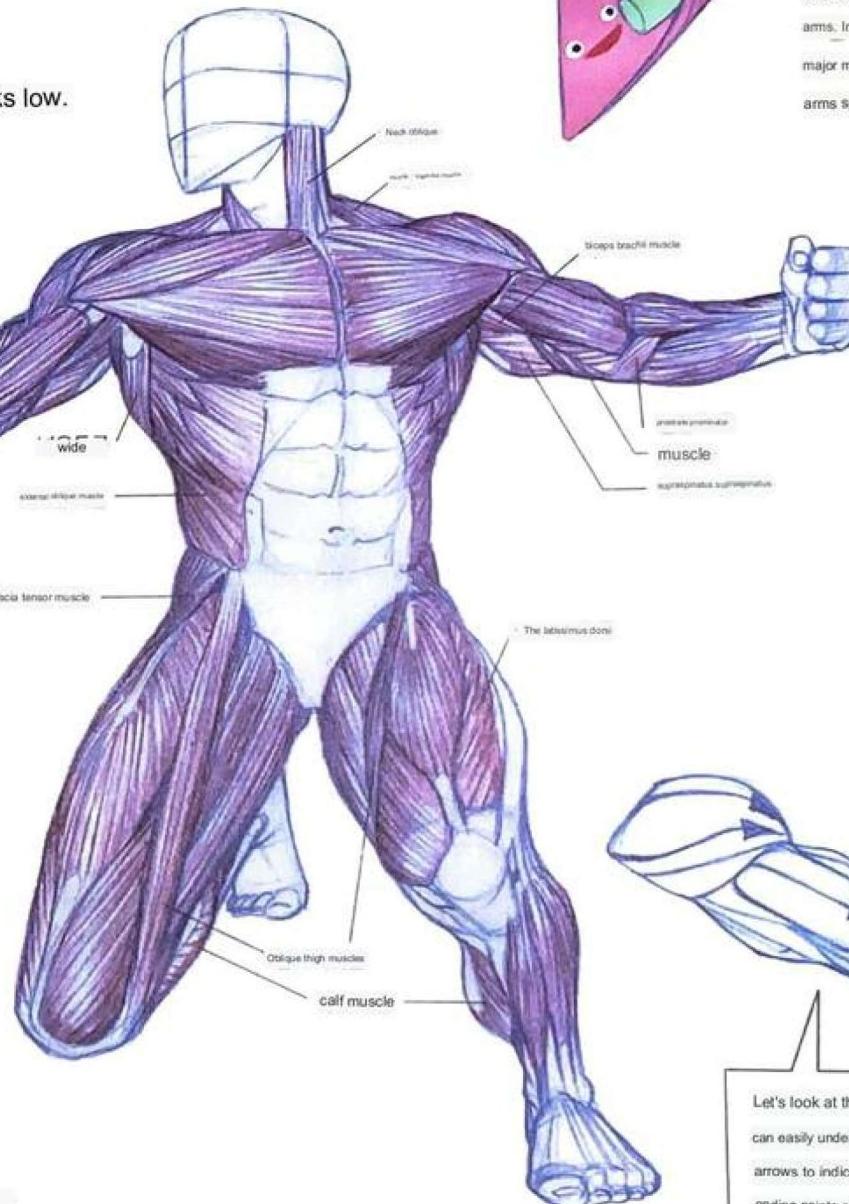
2, when the fist is pointing

down, the force pulling the arm into the

body is weakened.

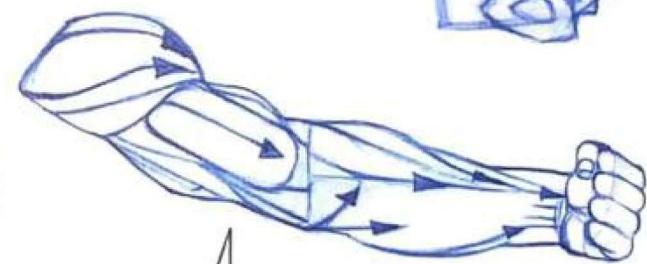


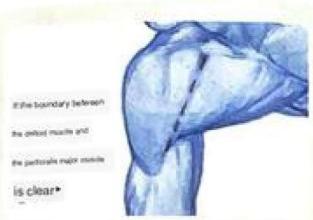
When the fist is gripped inside the body--When the fist is gripped outside the body--Strengthens the feeling of drawing power! Decreases the feeling of drawing power!



Broad back muscles and teres major muscles digging into the armpit • Muscular characters stand out with wide back muscles, and if you take a posture that shows the armpits, you can see the broad back muscles digging into the arms. In addition, the broad back muscle surrounding the teres major muscle is clearly visible in the side position with the arms spread out to the side.

Let's look at the structure with a simplified flow. You can easily understand the curvature of the human body by using arrows to indicate the direction of the starting and ending points of the muscles.



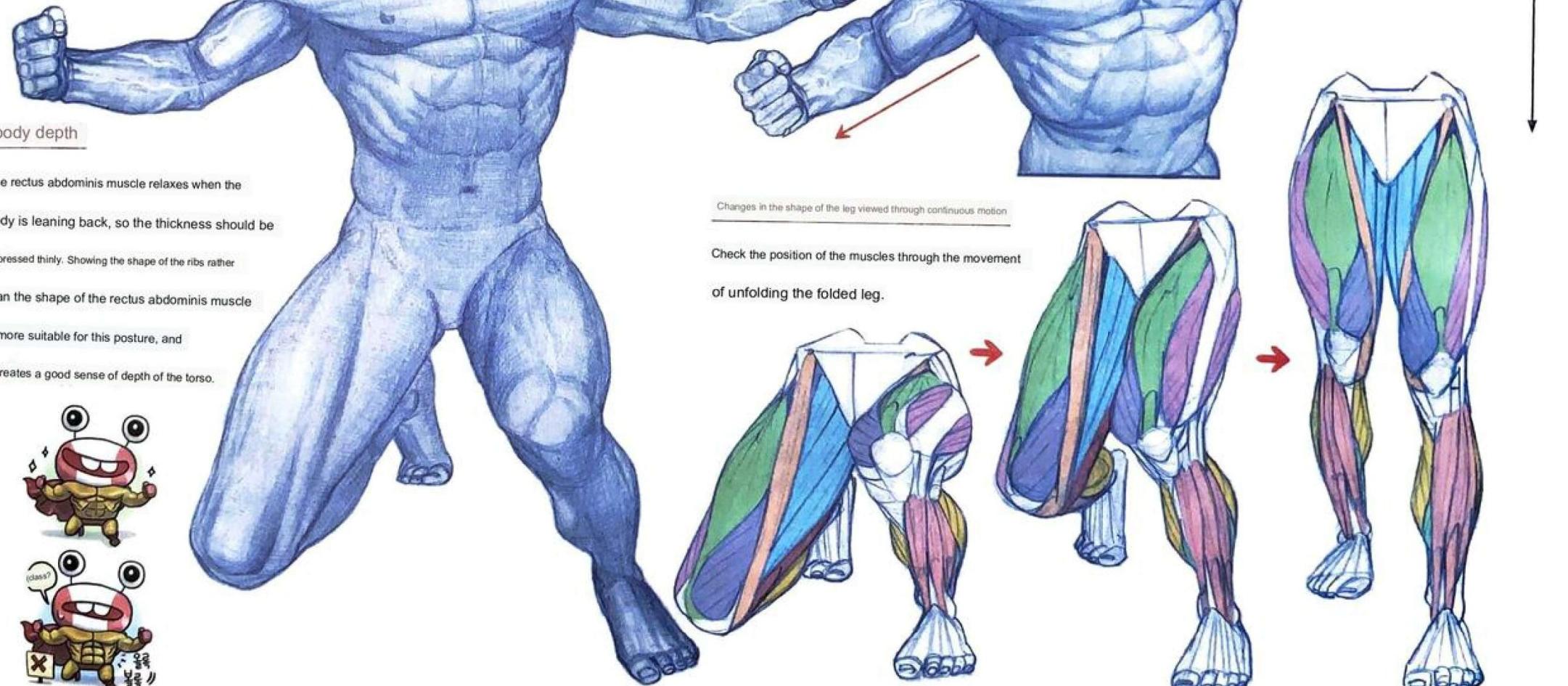


Boundary comparison between muscles

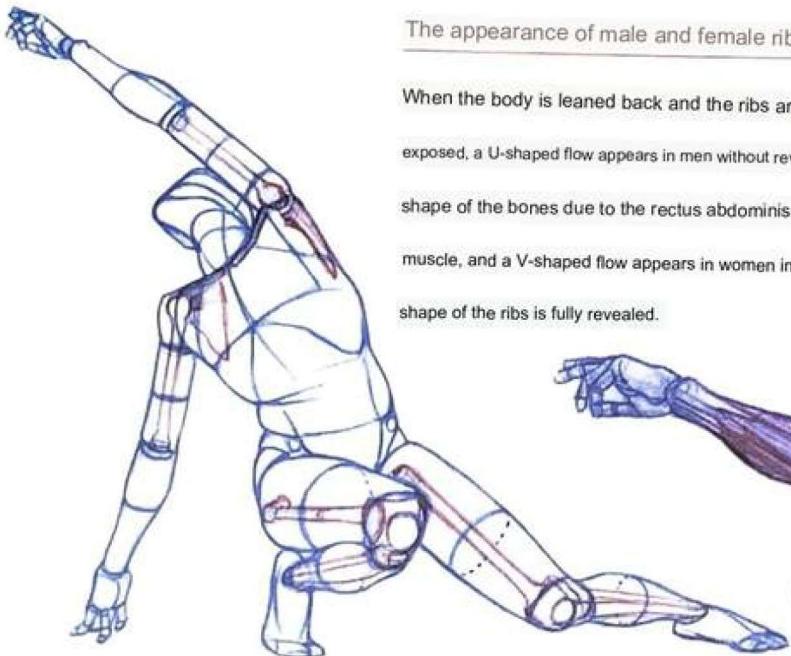
As the endpoint of the pectoralis major muscle points

toward the back, the boundary between the

deltoid muscle and the pectoralis major muscle becomes blurred.

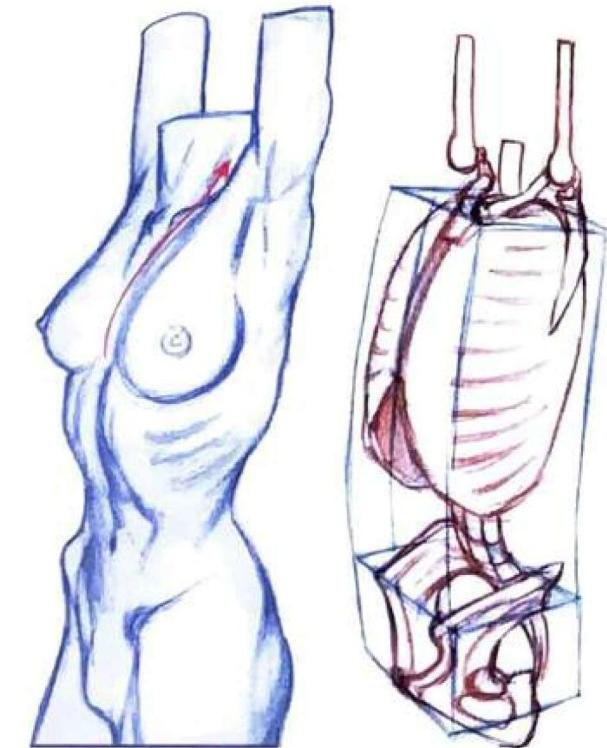
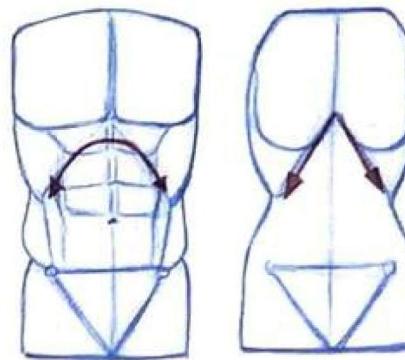


■ The posture of stretching one arm upward



The appearance of male and female ribs

When the body is leaned back and the ribs are exposed, a U-shaped flow appears in men without revealing the shape of the bones due to the rectus abdominis muscle, and a V-shaped flow appears in women in which the shape of the ribs is fully revealed.

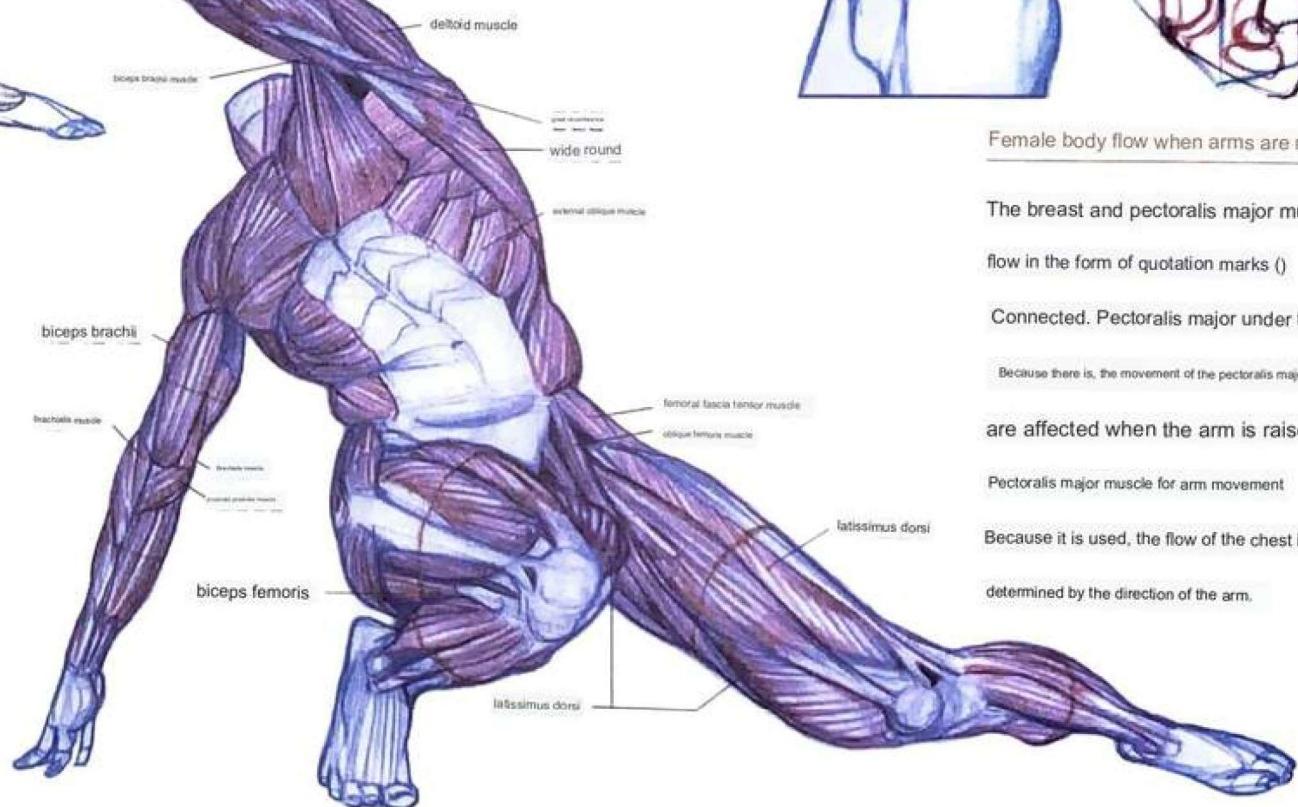


Female body flow when arms are raised

Incorrect answer note Connection of chin subjects

picture 1    picture 2

As shown in Figure 1, if you draw the part where the lower part of the chin and the neck connect with a gentle flow, you will gain weight or look older. Figure 2 doesn't gain weight like Figure 1, so it feels like a healthy young person.



The breast and pectoralis major muscles flow in the form of quotation marks ( )

Connected. Pectoralis major under the breast

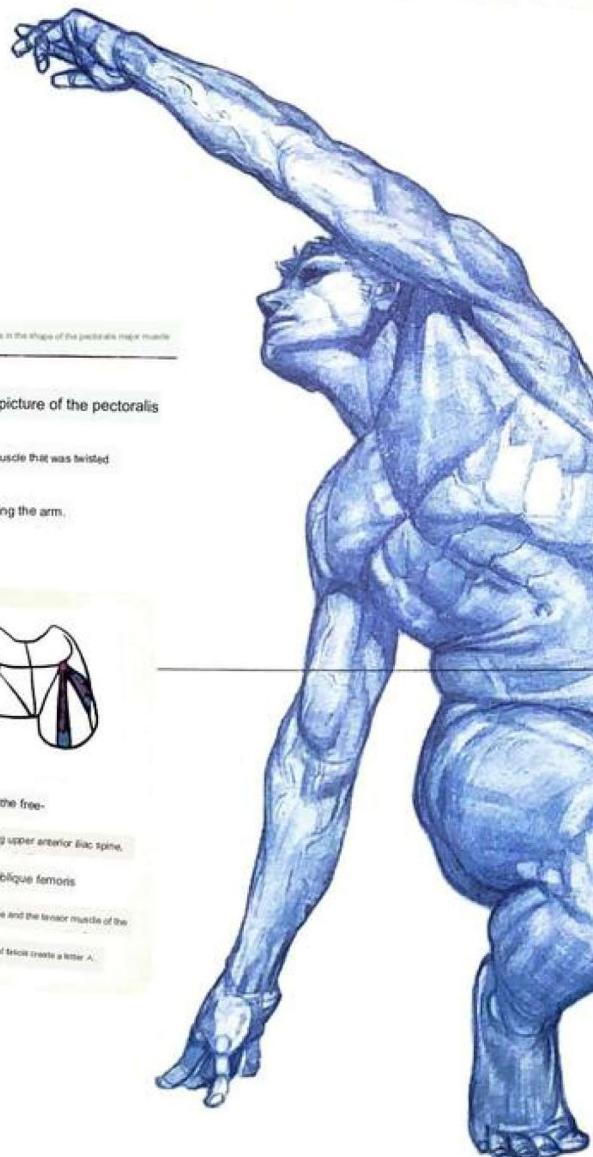
Because there is, the movement of the pectoralis major muscle are affected when the arm is raised.

Pectoralis major muscle for arm movement

Because it is used, the flow of the chest is determined by the direction of the arm.



When viewed from the front, the curve of the chest points downward, but when viewed from a low angle, the lower chest line follows the flow of the round body. Rather than focusing on the flow of the chest, which is a smaller unit than the torso, prioritize the flow of the body, which is the largest unit.



Changes in the shape of the pectoralis major muscle

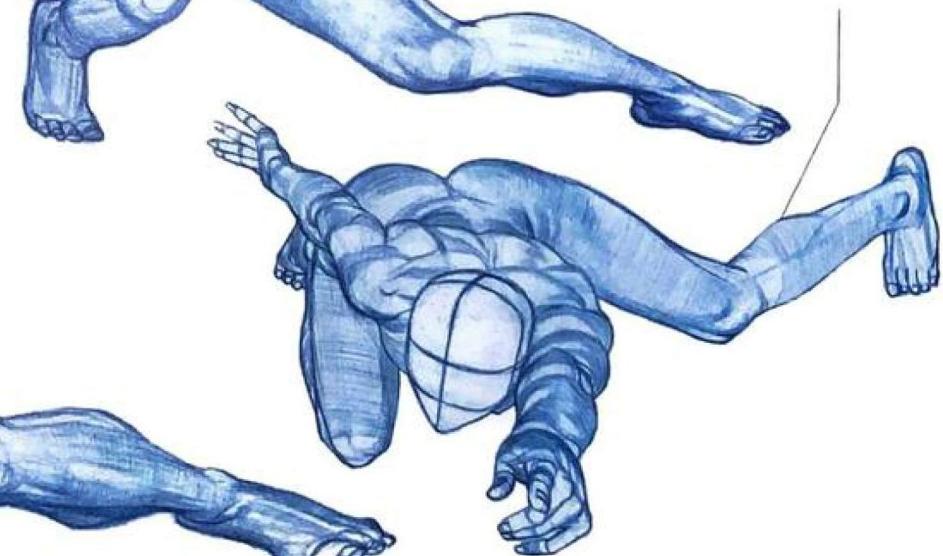
It is a picture of the pectoralis major muscle that was twisted by raising the arm.



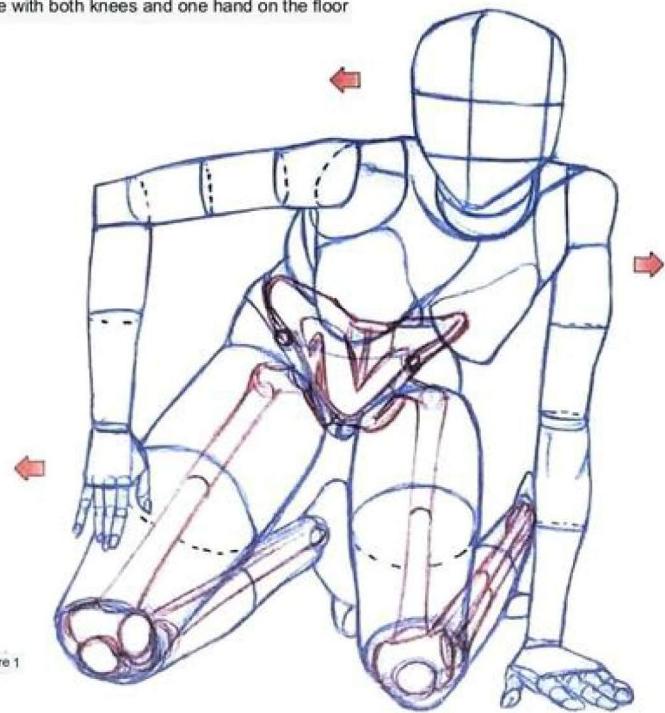
A In the free-flowing upper anterior back spine, the oblique femoris muscle and the tensor muscle of the front fibula create a letter A.



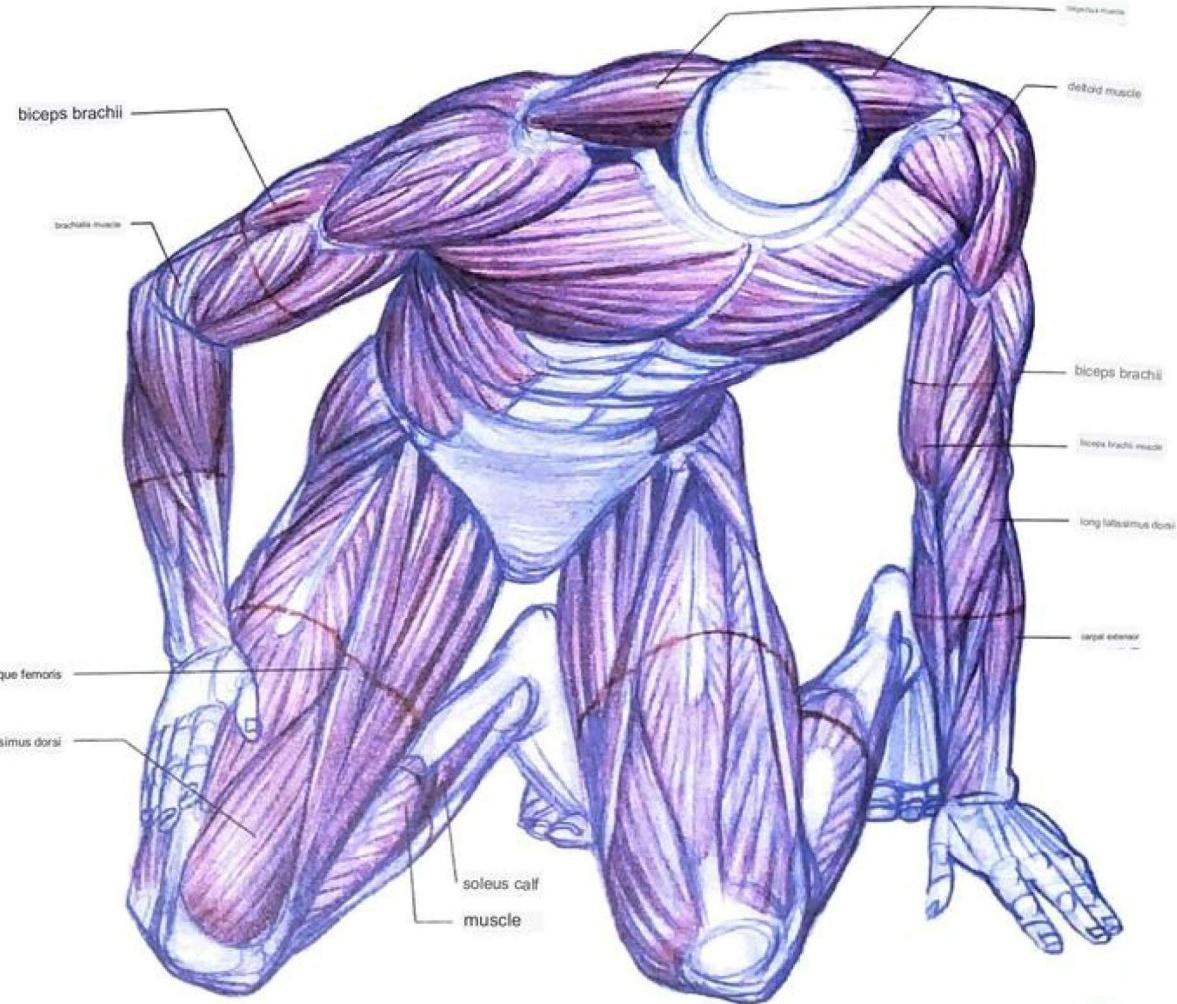
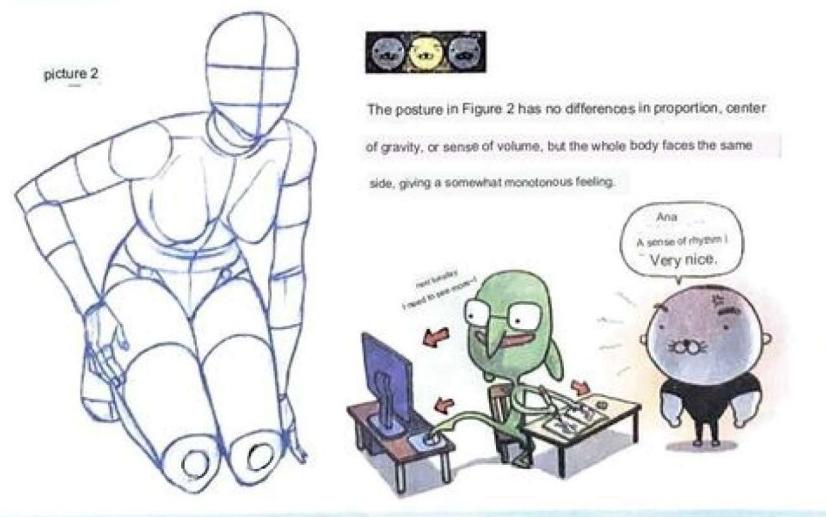
The flow of the human body viewed from a high angle. The contact between the ears and arms when the arms are raised, the slope of the shoulder and pelvis crossing each other, and the S-shaped flow of the spine should also be expressed at the high angle.



■ A posture with both knees and one hand on the floor

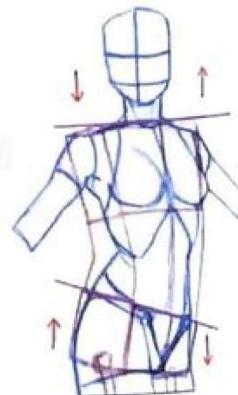


Incorrect answer note Monotonous gesture



Draw a rhythmic movement

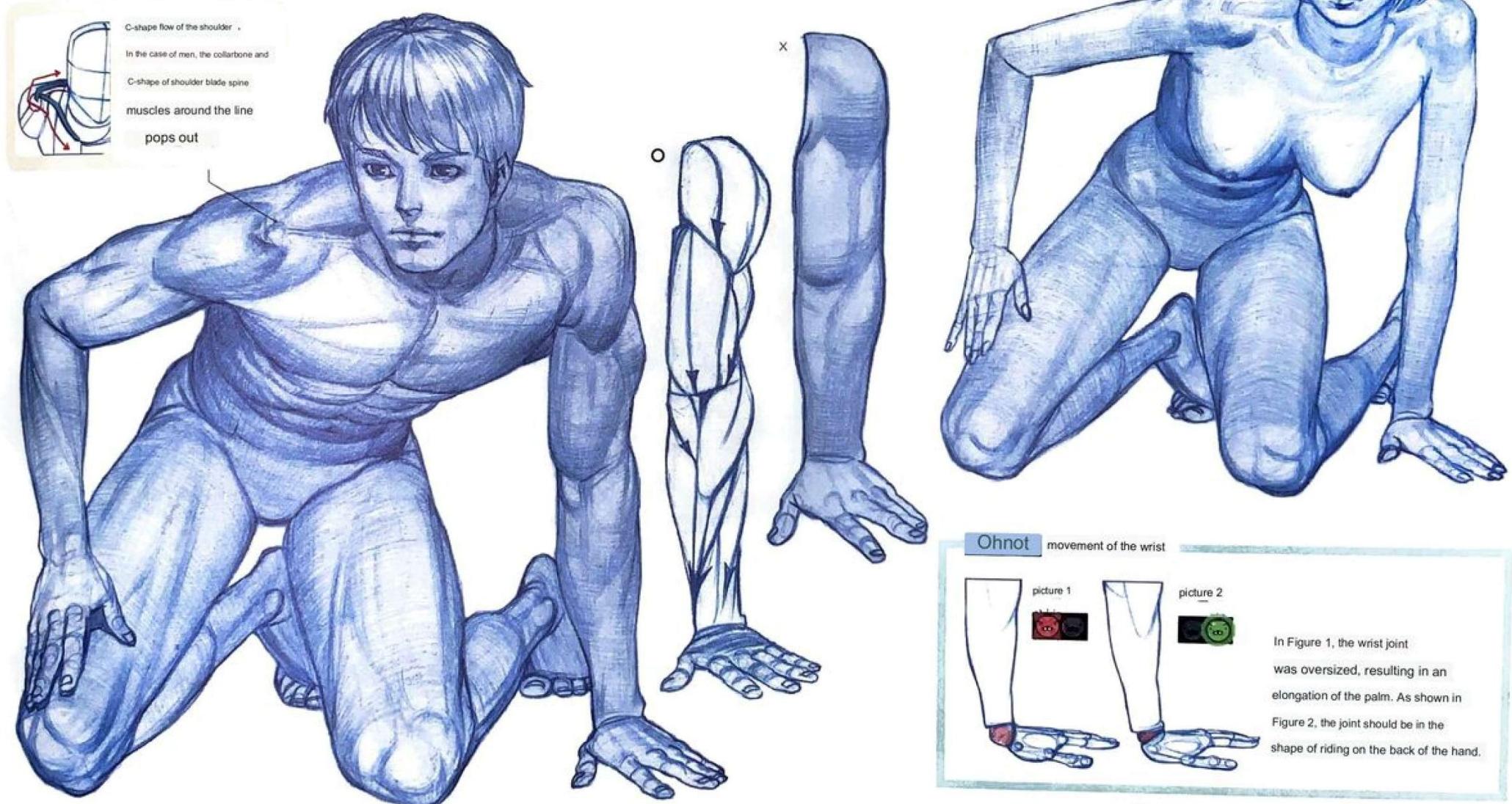
When expressing a rhythmic movement, generally the method of staggering the slope of the shoulders and pelvis up and down is often used. But other than that, there are many other ways. Figure 1 gives a sense of rhythm to the posture by differentiating the direction of the gaze and the left and right directions of the upper and lower body in a state where the inclination of the shoulder and pelvis is the same up and down.



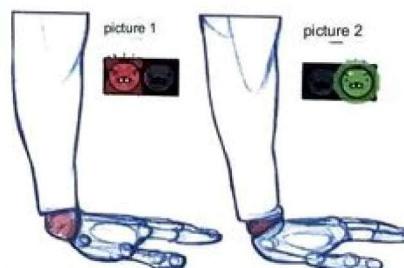


An outstretched arm is not a straight line

The muscles of the arms are intertwined like a pretzel to create a bumpy flow. However, the level of this 'bumpy' is very ambiguous. Incorrect emphasis on the muscles can result in a disastrous drawing, as if a broken arm bone. Conversely, if you omit the flexion, the arm becomes a single cylinder as if there were no joints. After learning the flow of the human body through croquis, let's practice in the order of studying anatomy to find a more accurate flow.



### Ohnot movement of the wrist



In Figure 1, the wrist joint was oversized, resulting in an elongation of the palm. As shown in Figure 2, the joint should be in the shape of riding on the back of the hand.

## ■ Women's various sitting postures

### S-shaped flow of female ribs

Women have thinner muscles, so the shape of the ribs forms the contours of the body. Especially when leaning back or inhaling the upper body, the straight line of the ribs is clearly visible.

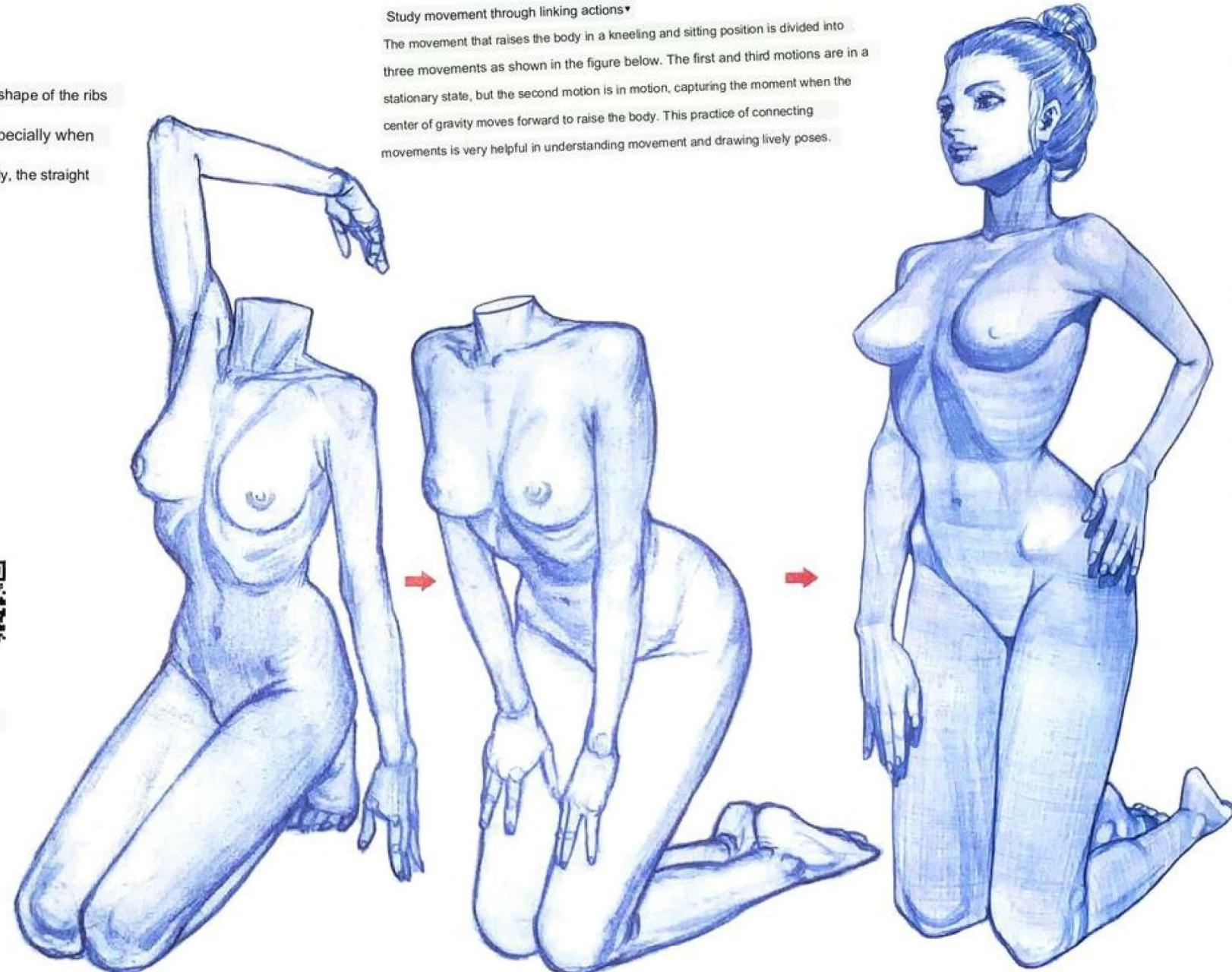


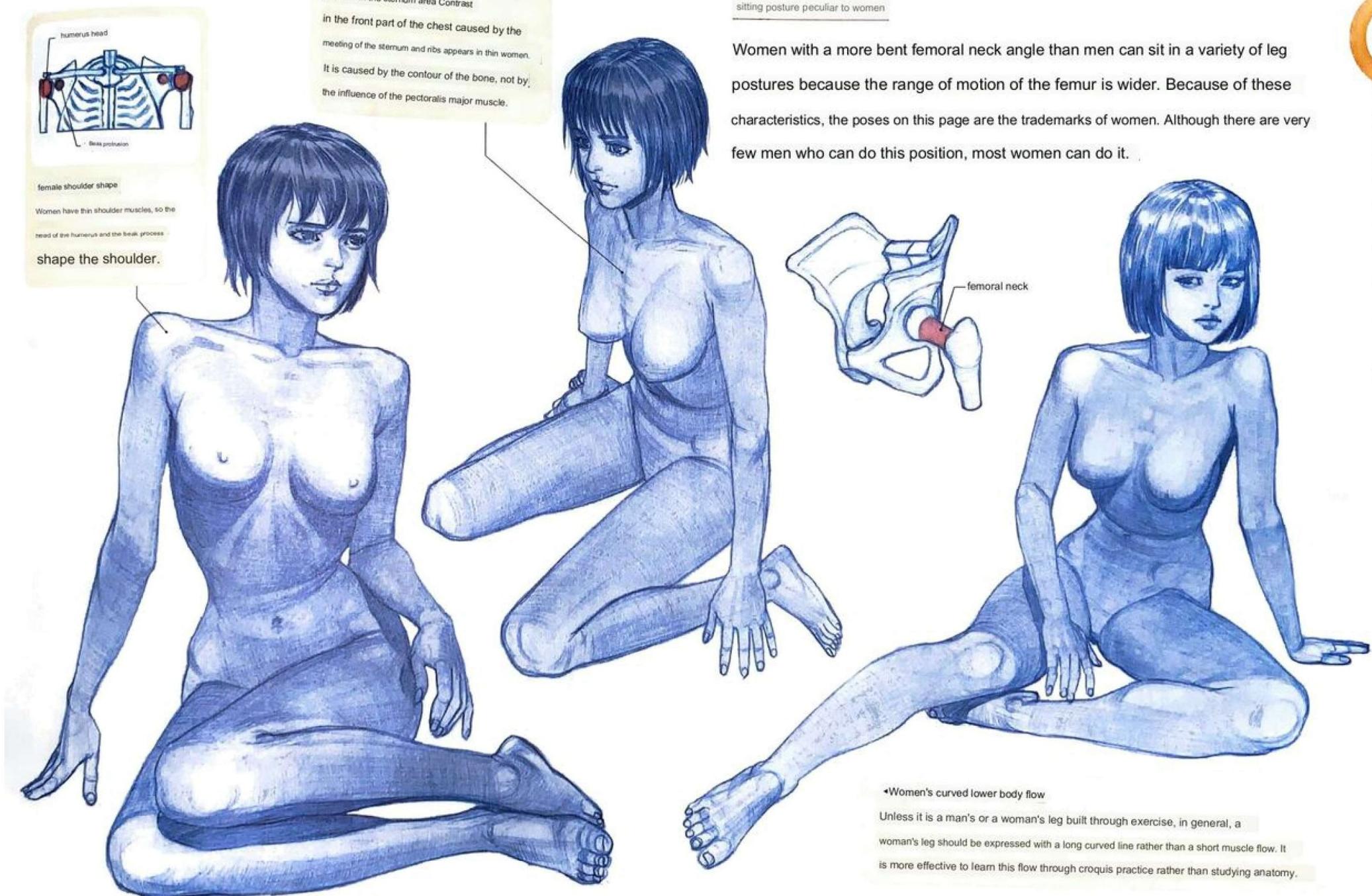
### superior anterior iliac spine

The superior anterior iliac spine is a representative point on the outside of the female pelvis. Unlike men, the ridge of the hipbone is buried due to the fat accumulated in the pelvis, but the spine of the upper anterior hipbone stands out. If you connect both upper anterior iliac spines, you can find out the tilt of the pelvis.

### Study movement through linking actions▼

The movement that raises the body in a kneeling and sitting position is divided into three movements as shown in the figure below. The first and third motions are in a stationary state, but the second motion is in motion, capturing the moment when the center of gravity moves forward to raise the body. This practice of connecting movements is very helpful in understanding movement and drawing lively poses.





■ Sitting posture with both hands on the floor

shape on the skeleton

Just because it's a figure

It's not drawing. inside the body

After drawing the skeleton first,

Because it's a drawing

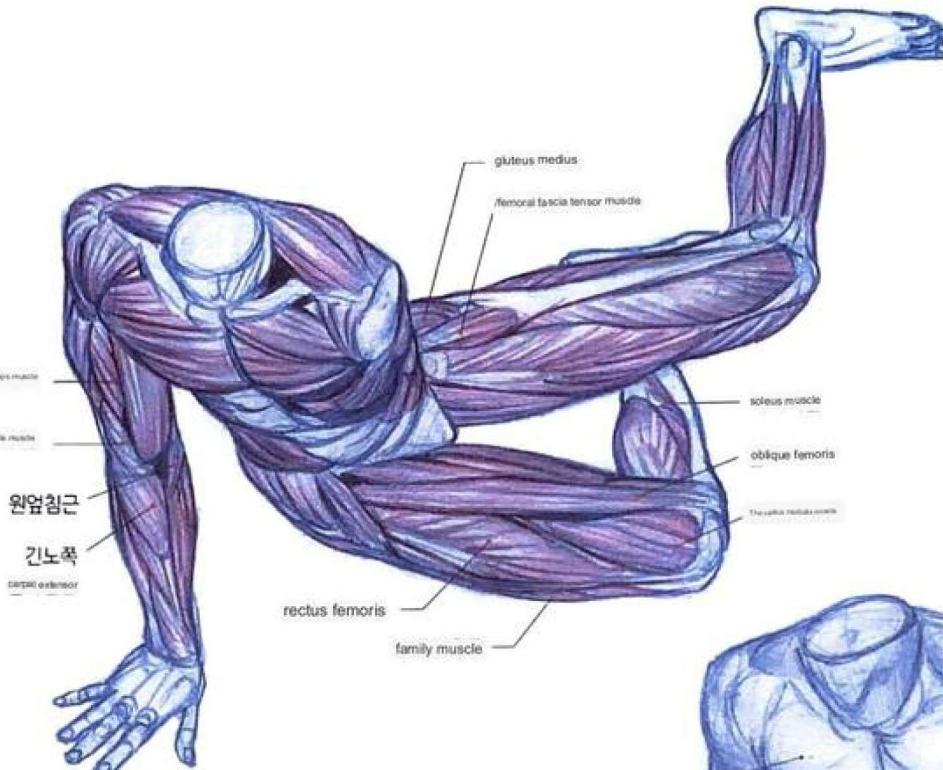
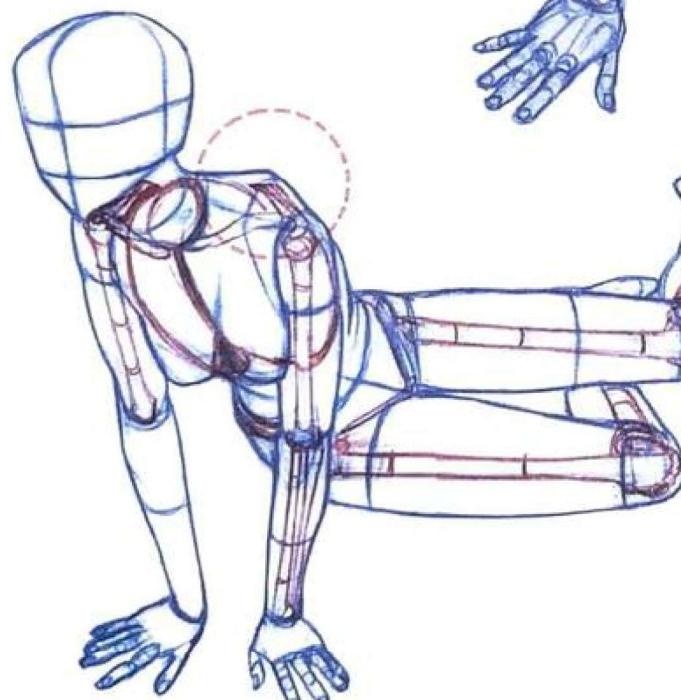
The shoulder blades affect the silhouette

In the giving position, below

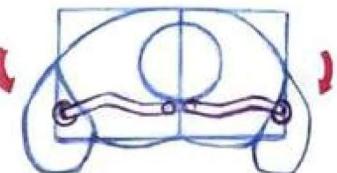
and the part circled

As well as the angular flow by the bone

must be expressed.

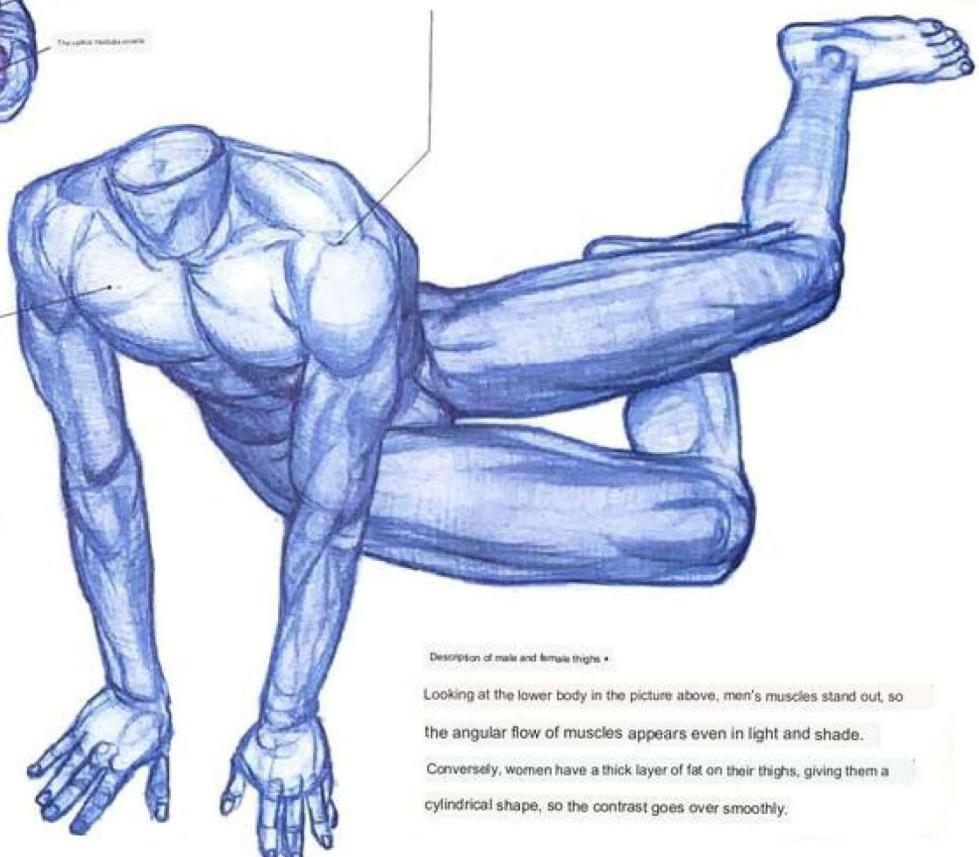


+



position of the shoulder

In 'Chapter 1 Figure of the Human Body', I explained the movement of the shoulder by dividing it into up and down, front and back, so that you can easily understand it. The figure below shows a combination of these two movements.



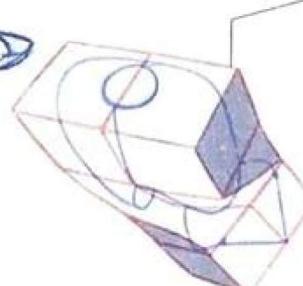
Description of male and female thighs \*

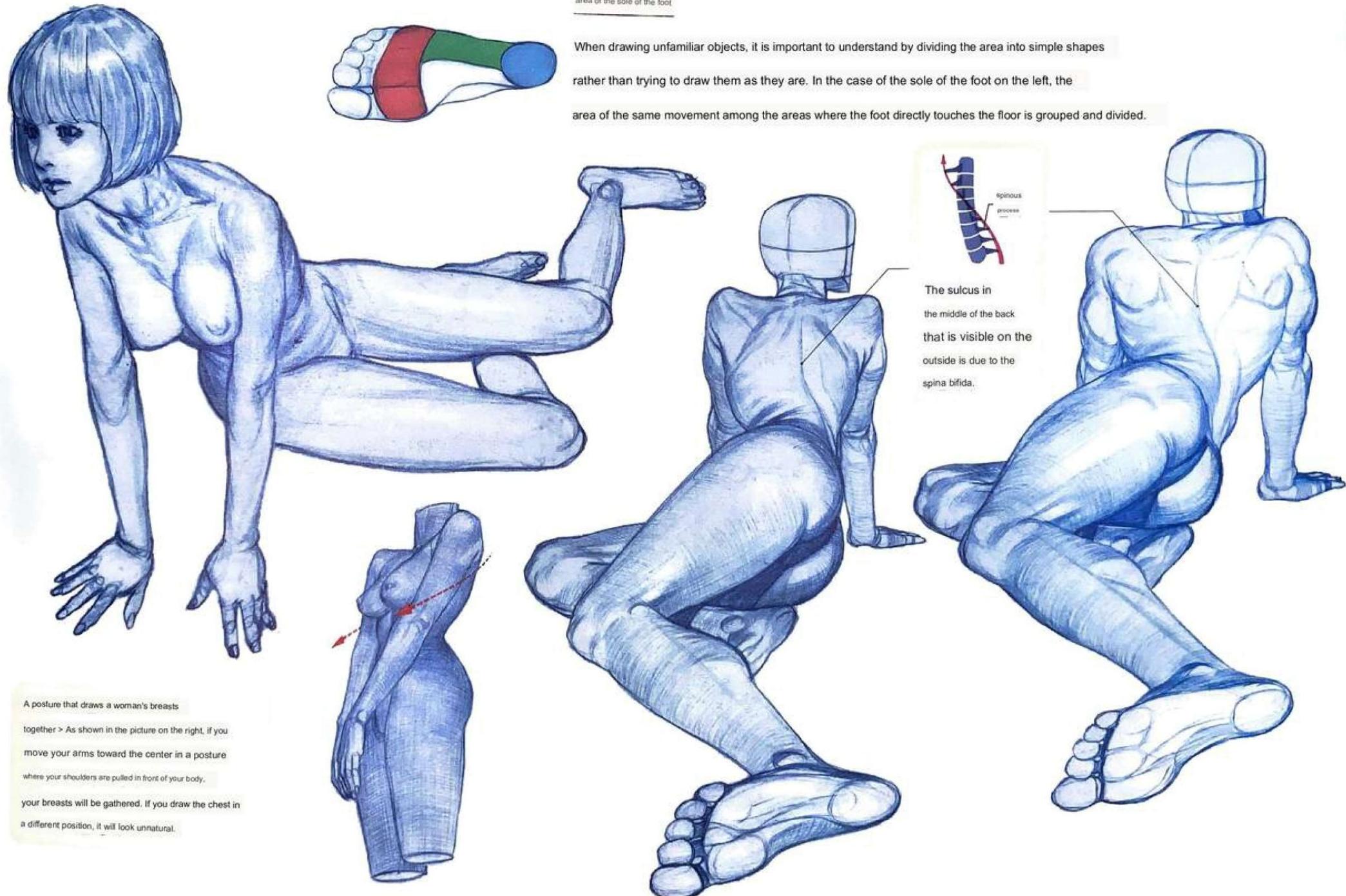
Looking at the lower body in the picture above, men's muscles stand out, so the angular flow of muscles appears even in light and shade.

Conversely, women have a thick layer of fat on their thighs, giving them a cylindrical shape, so the contrast goes over smoothly.

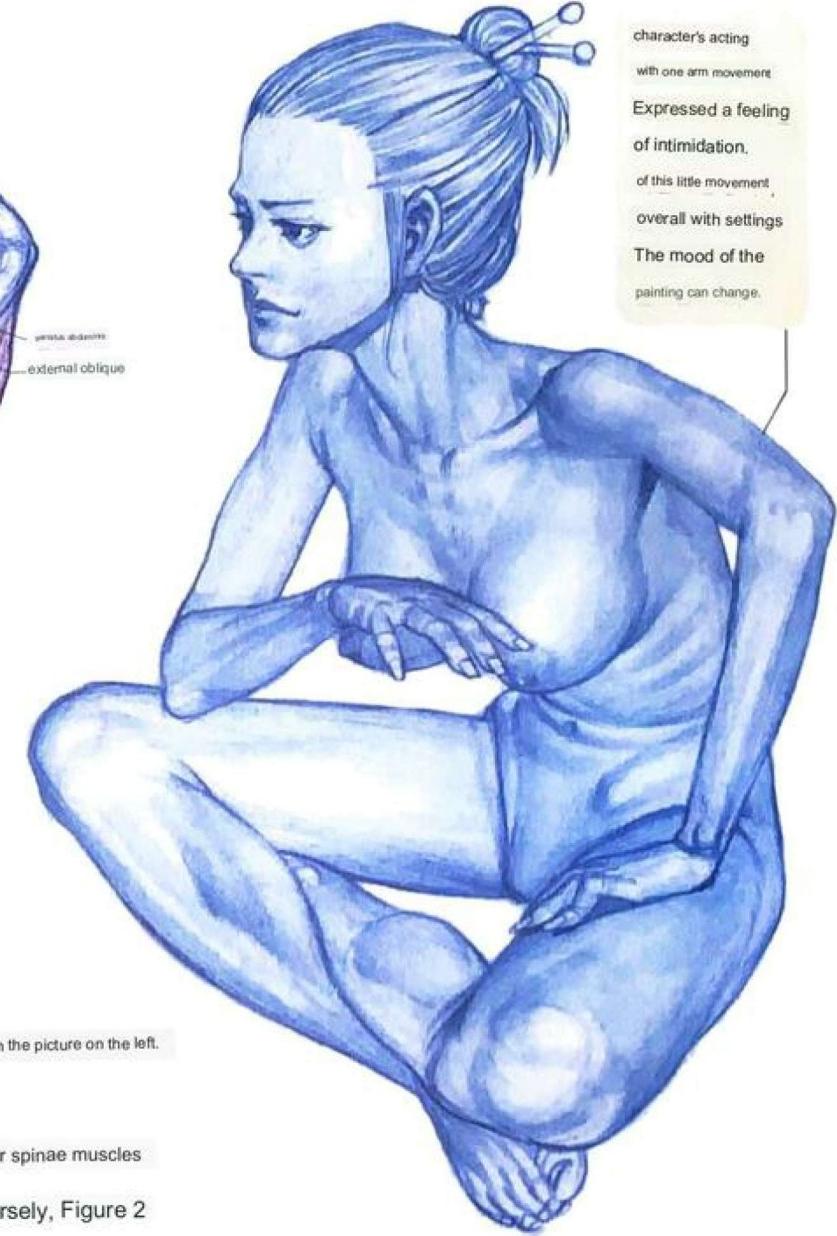
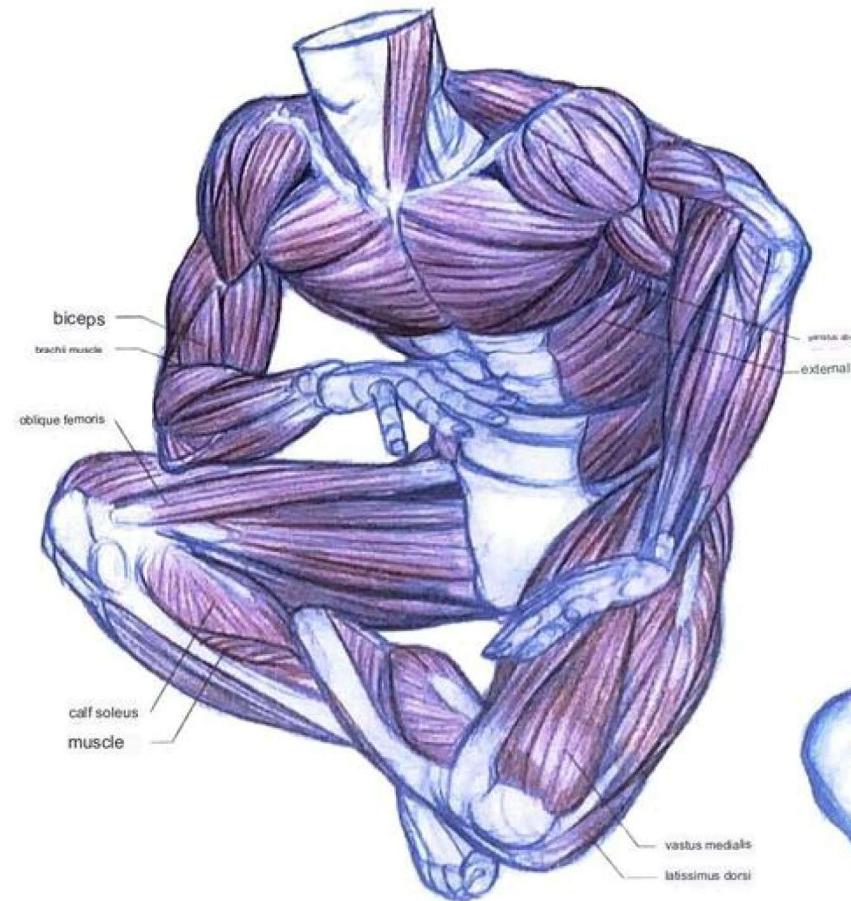
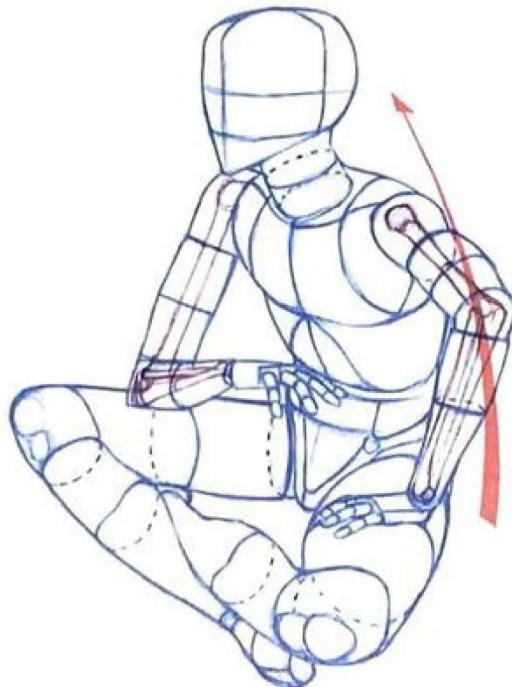
#### Twisted Torso Box ▲

In order to draw the twisted waist in the picture on the right, a twisted box must be drawn as above from the basic stage.

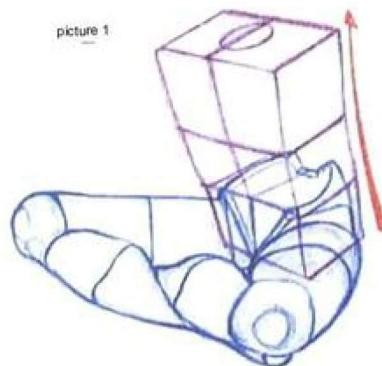




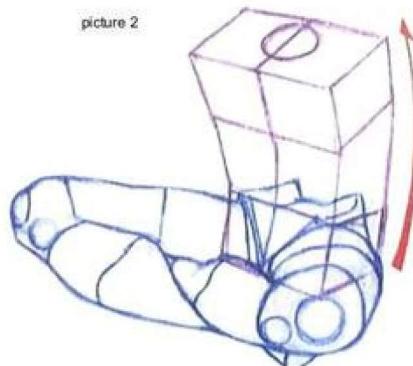
■ Cross-legged sitting posture



picture 1



picture 2



Two positions on the cross leg

When cross-legged, follow the flow of the body as shown in the picture on the left.

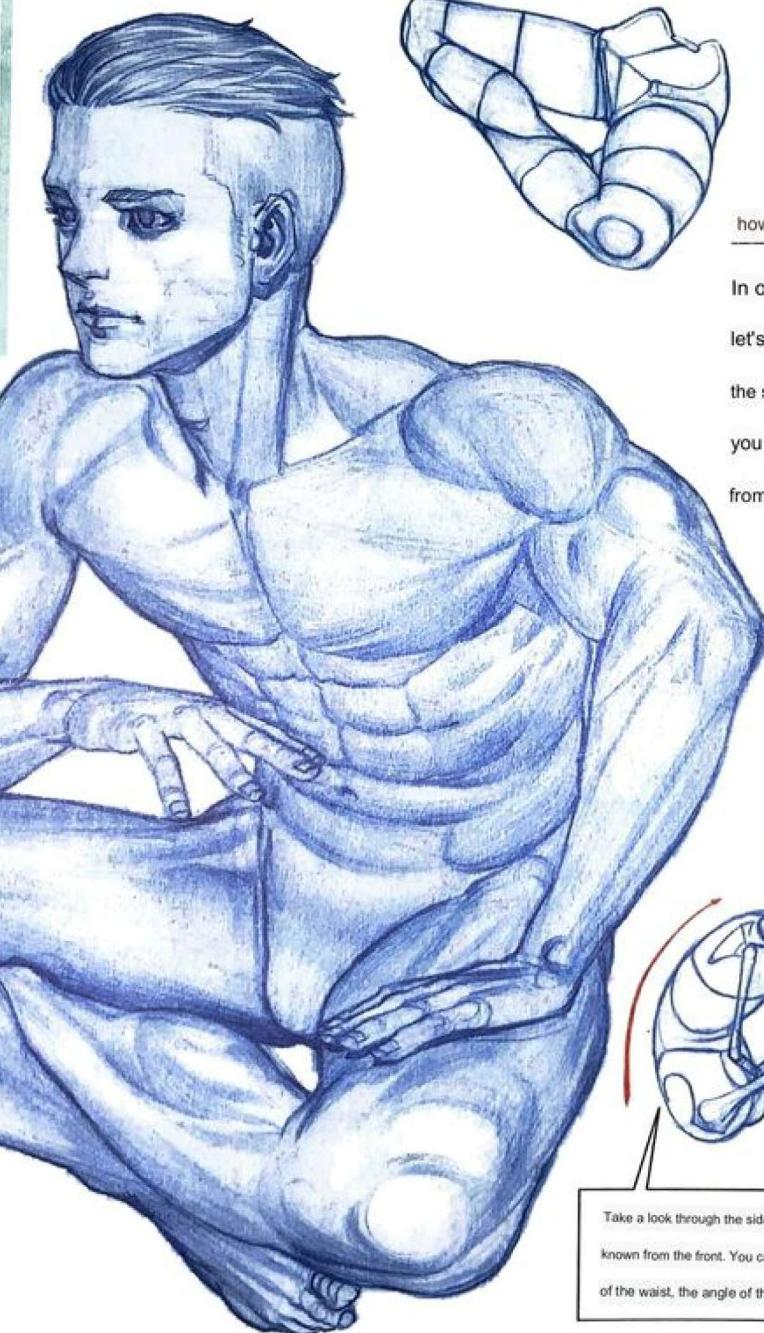
Two postures appear.

Figure 1 shows a tense posture in which the erector spinae muscles are contracted with the back erect. Conversely, Figure 2 shows a comfortable posture in which the spine is relaxed and the waist is bent forward. The pictures above were drawn in the pose of Figure 2.

Incorrect answer note Incorrect cross-legged posture

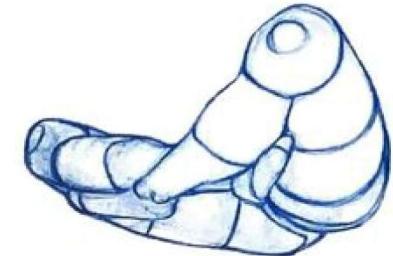
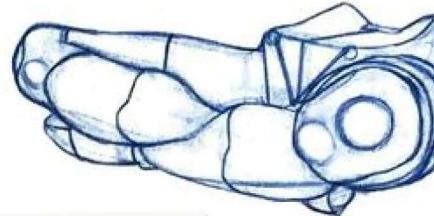
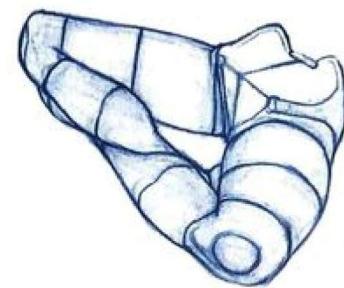


The knees of a cross-legged person sitting cross-legged cannot touch the floor as shown in the picture above. The knee is separated from the floor because the volume of the crossed legs creates a gap with the floor.



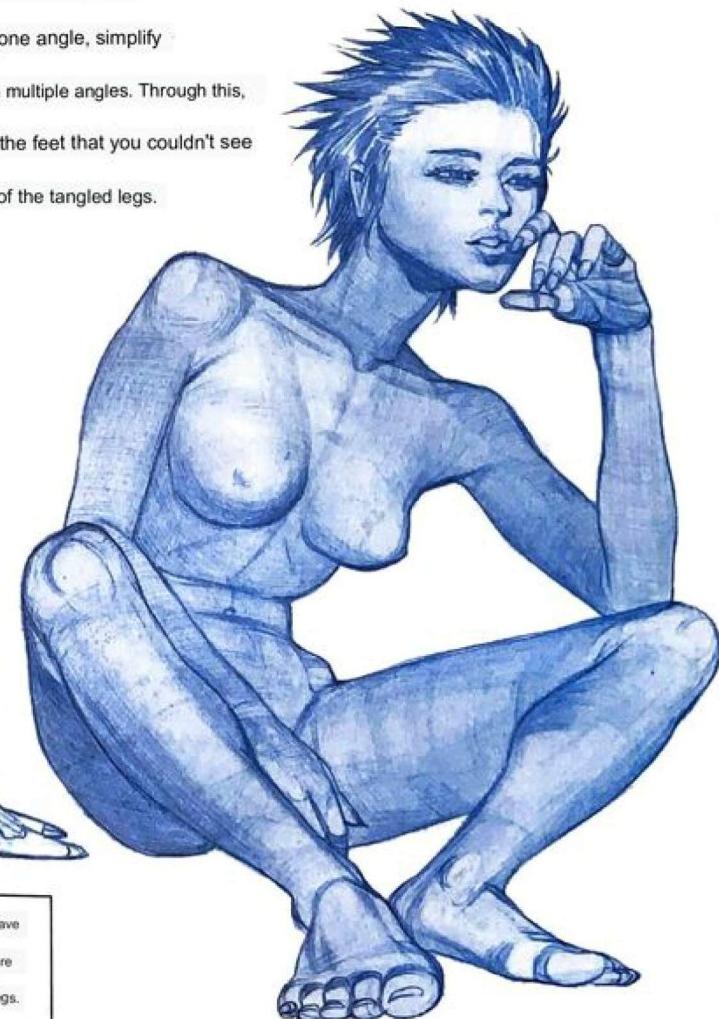
form of overlapping

When the flesh is overlapped, the muscle is pushed out and a boundary line follows the shape of the muscle. In the pose shown in the picture, you can see the boundaries of the calf muscles.



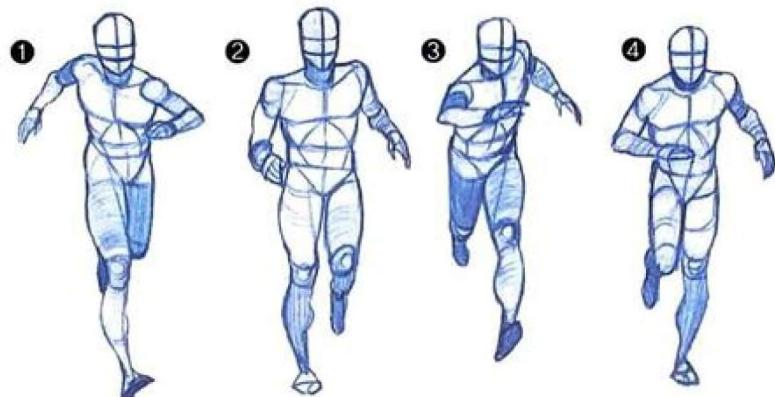
how to understand structure

In order to understand a difficult structure, let's not look at it from only one angle, simplify the shape and observe it from multiple angles. Through this, you can see the position of the feet that you couldn't see from above, or the structure of the tangled legs.



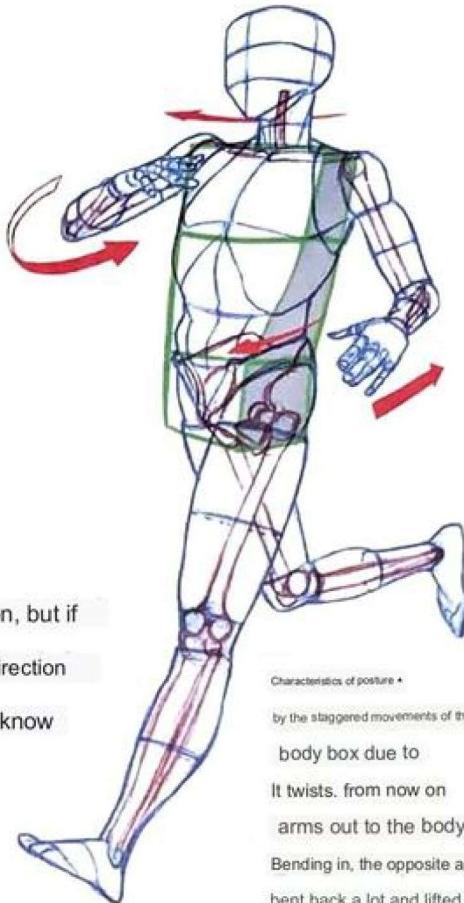
### |3 Running postures

Running posture viewed from the side

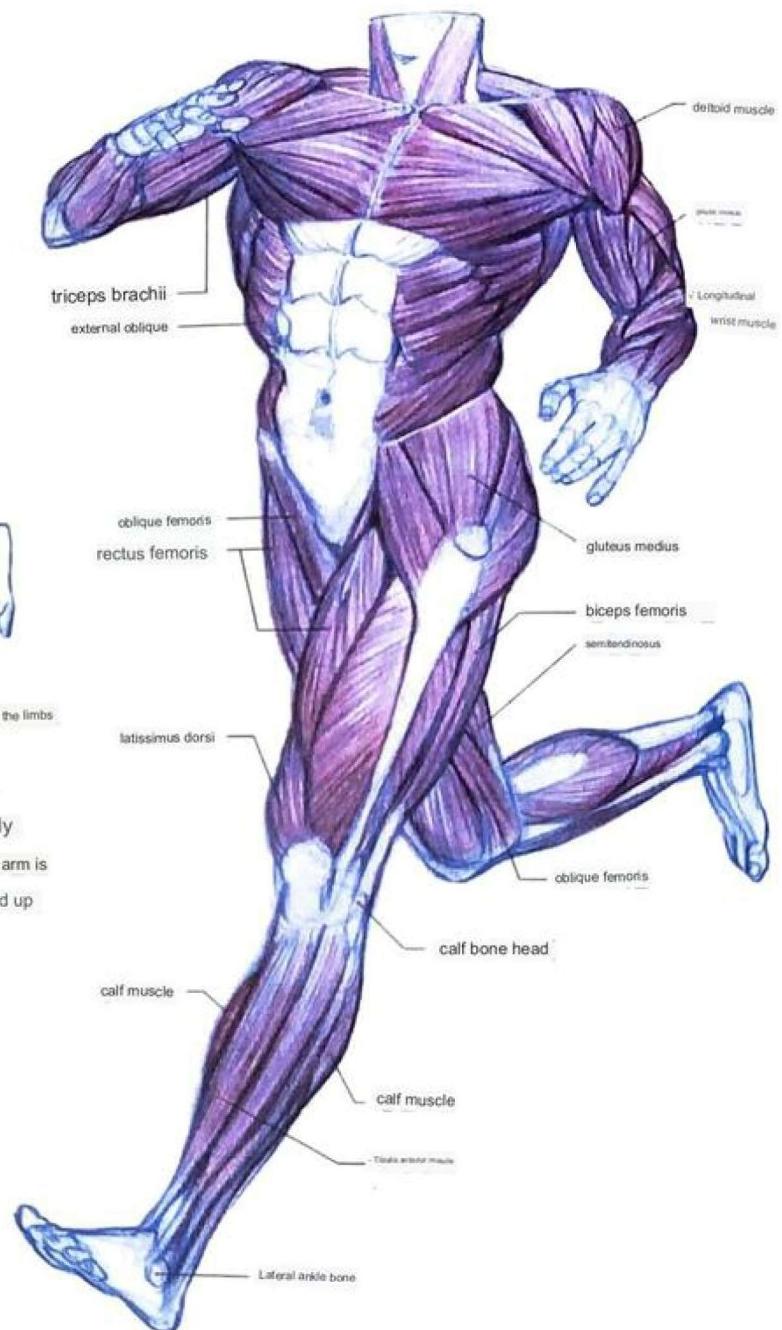


Drawing continuous motion of running

Walking or running can be seen frequently in everyday life. It's such a familiar motion, but if you divide it into a few scenes and draw it, it's not as simple as you think. The movement direction and center of gravity of the limbs are different for each movement, and you need to know these points accurately for each posture to express a natural movement. If you observe the posture in the picture on the right a little bit, you can see that it is the scene most similar to the picture in No. 2 above. When drawing a movement like this, if you think of it as a torso box, you can express various movements.



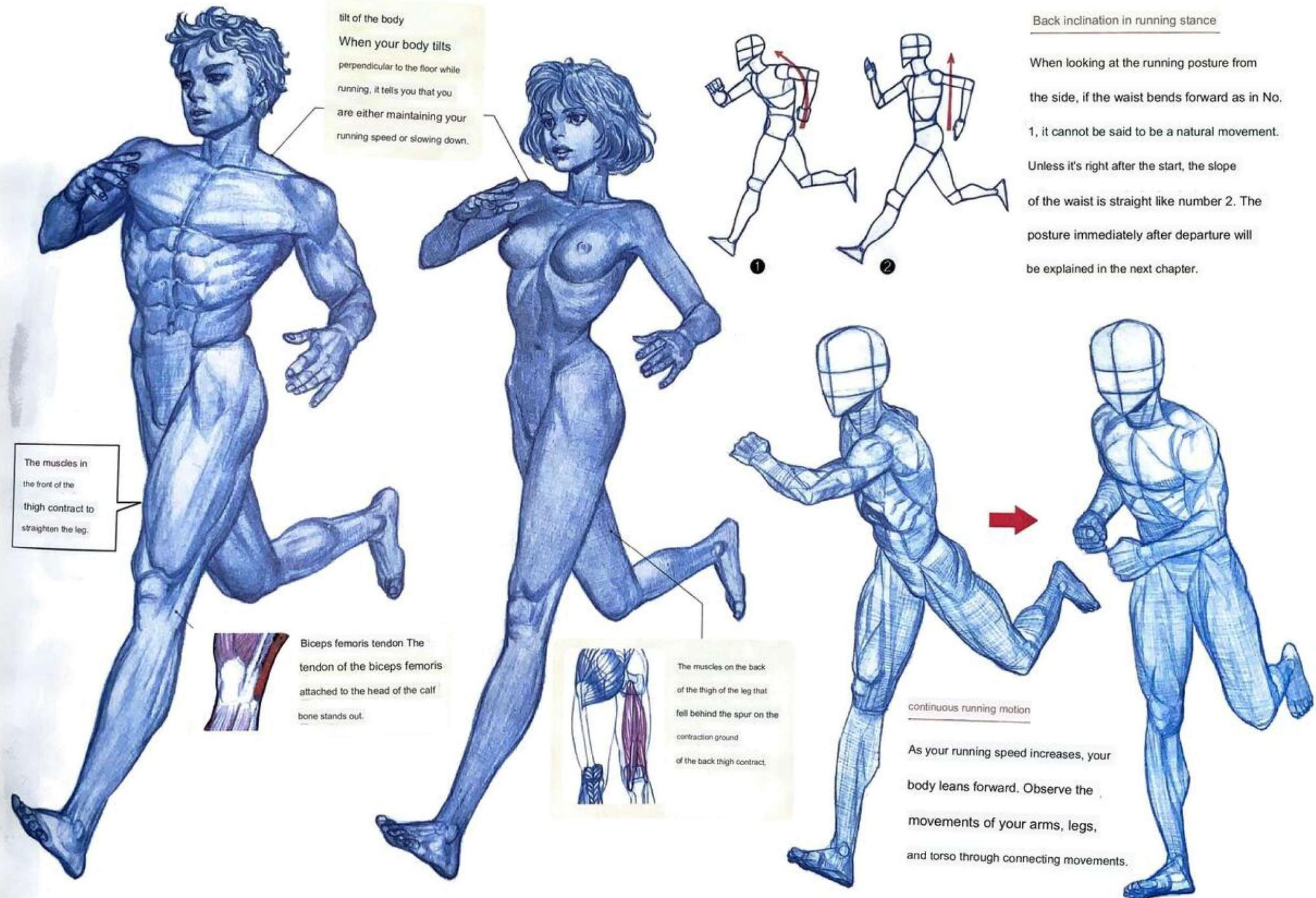
Characteristics of posture •  
by the staggered movements of the limbs  
body box due to  
It twists. from now on  
arms out to the body  
Bending in, the opposite arm is  
bent back a lot and lifted up  
not.



Incorrect note A common mistake in running posture



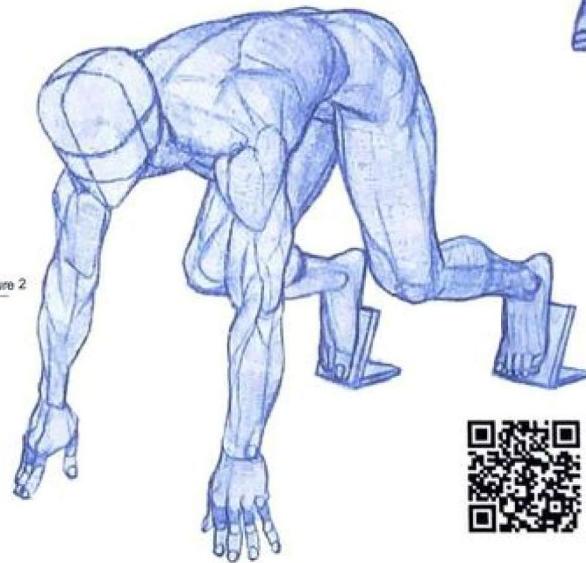
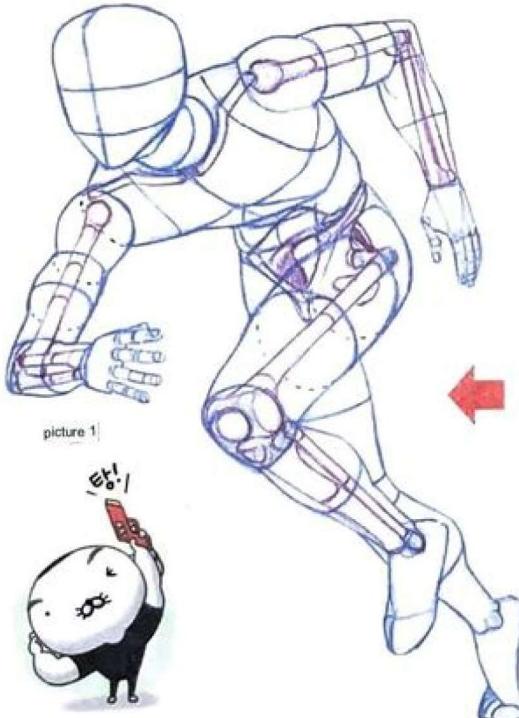
When students are asked to draw a running motion, they often make the mistake of holding the figure's arms upright and shaking them back and forth, like an emergency exit mark. It is correct that the angle of the elbow is bent at 90 degrees, but the direction of the arm should come inside the body. If the tilt of the shoulders and pelvis is both horizontal and looking straight ahead, or if the heel touches the buttock, it becomes an unnatural movement.



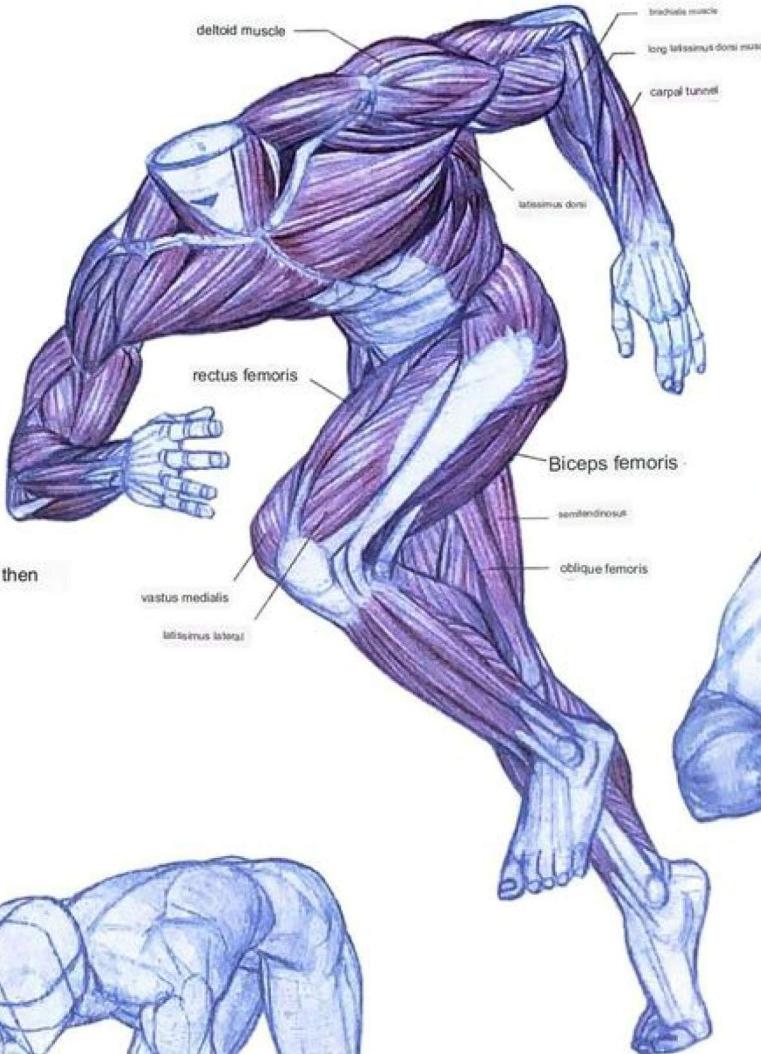
## ■ Starting posture for running

### Characteristics of the starting position

As explained earlier, when the back is bent forward in the running posture, it means that it is in the posture immediately after starting. As shown in Figure 2 below, the preparation posture for running starts from a low posture with the hands on the floor and the waist bent, so the waist is gradually erected immediately after starting and runs forward. The reason for the low running readiness is to compress the body as much as possible like a spring and then bounce off. As such, running postures are very diverse.



picture 2



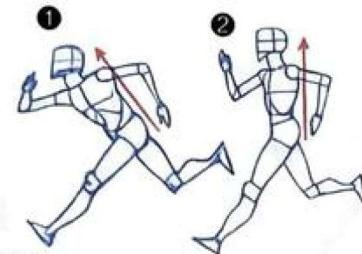
femoral fascia tensor muscle

To lift the thigh forward, the tensor fascia muscle must contract. The femoral fascia tensor muscle is a muscle that connects the thigh and pelvis, so the direction of the visible wrinkles and the sense of volume of the muscle are important.



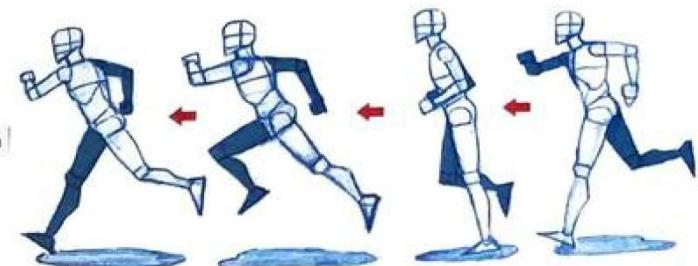
express the acceleration

Position 1, in which the body tilts forward, increases the running speed, and position 2 maintains or decreases the running speed. In both postures, the waist is straight and the only difference is the inclination.



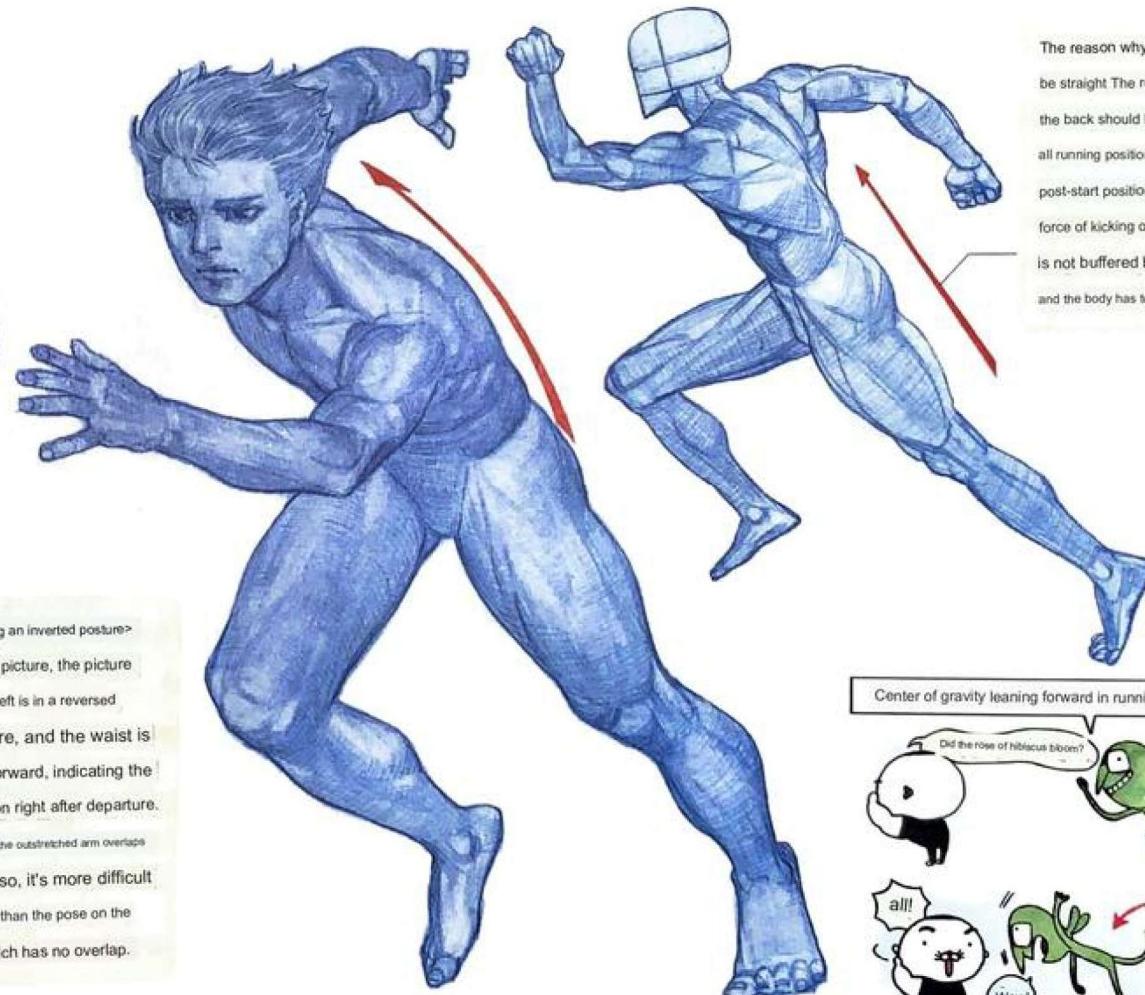
View continuous motion from the side

In the running motion, the arms and legs move back and forth, so the characteristics of the movement stand out from the side rather than from the front. Since most of the joints in the limbs move back and forth, it is important to observe from the side when drawing any action.



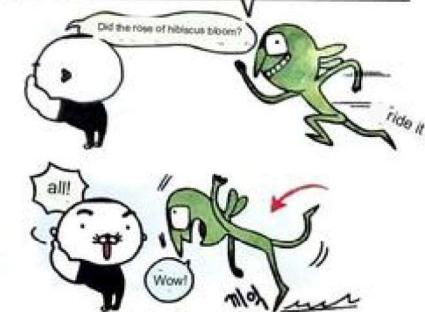
The triangular empty space that appears between the deltoid muscle and the pectoralis major muscle is evident not only in muscular men but also in thin women.

**Drawing an inverted posture?**  
In this picture, the picture on the left is in a reversed posture, and the waist is bent forward, indicating the situation right after departure. Because the outstretched arm overlaps the torso, it's more difficult to draw than the pose on the left, which has no overlap.



The reason why the back should be straight. The reason why the back should be straight in all running positions other than the post-start position is because the force of kicking off the ground is not buffered by the lower back and the body has to be pushed forward.

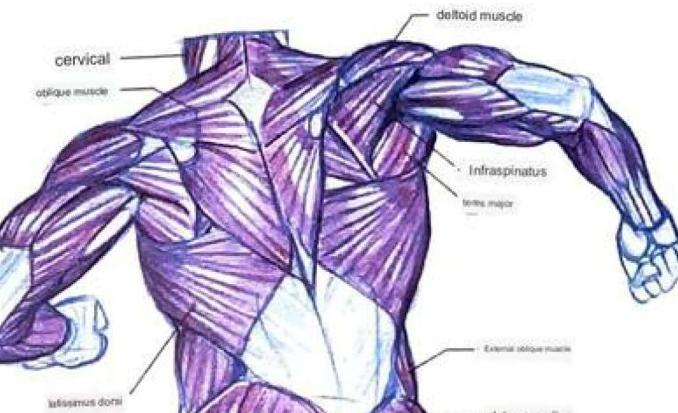
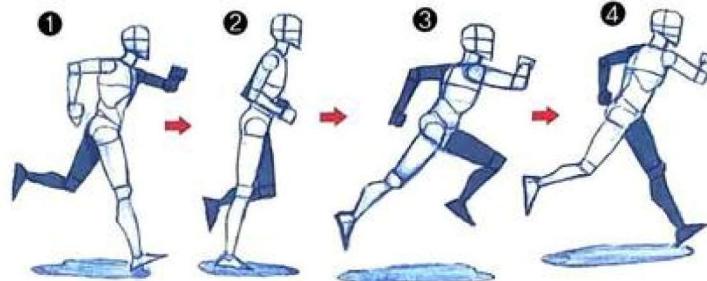
Center of gravity leaning forward in running position



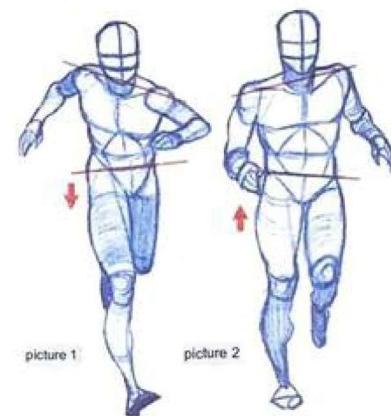
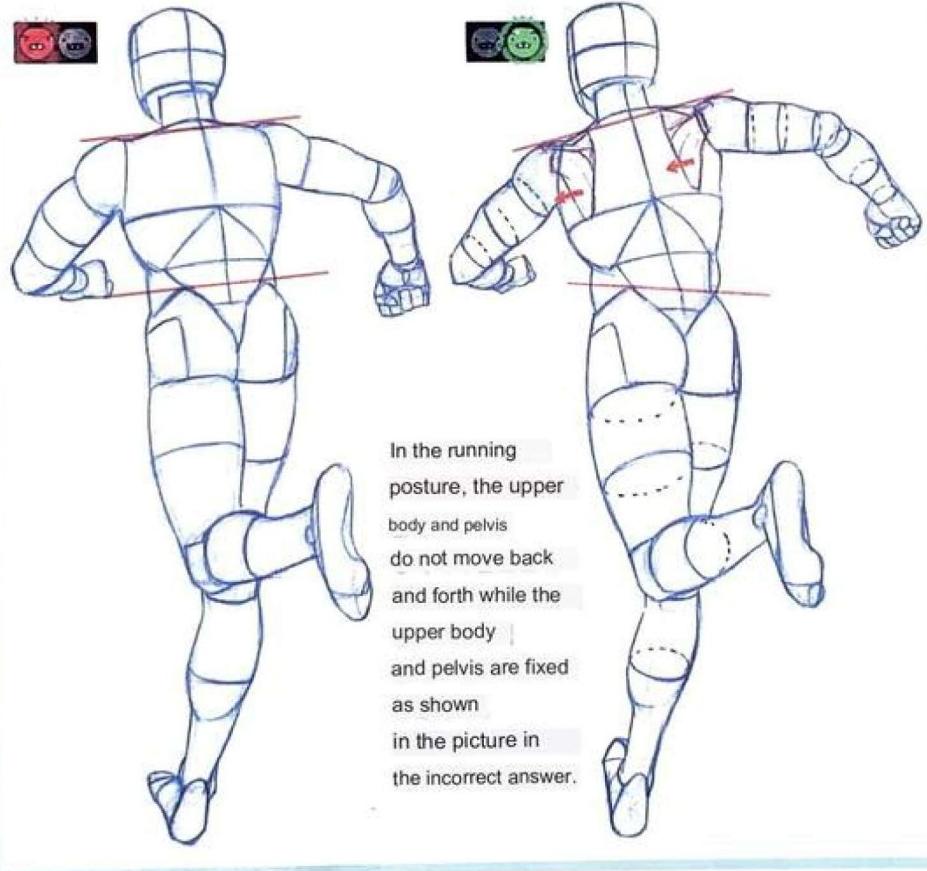
■ Running posture viewed from behind

Characteristics of running posture

The figures on this page are a view from the back of posture #1 of the connecting movements on the right. The point of this position is to touch the ground first with your heels as you land with your feet in the air.

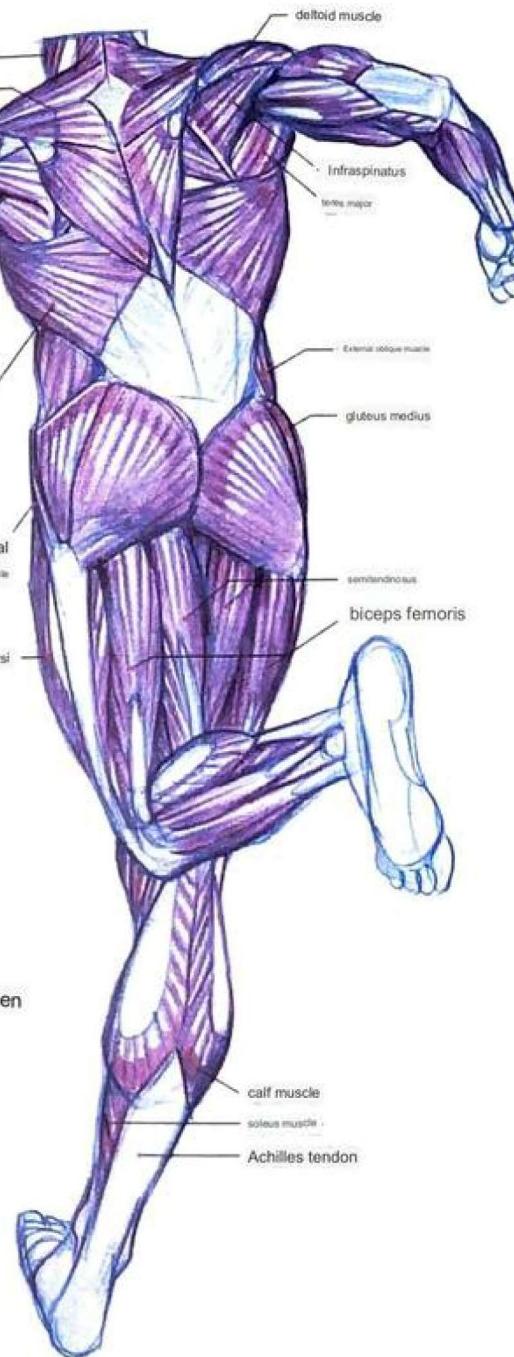


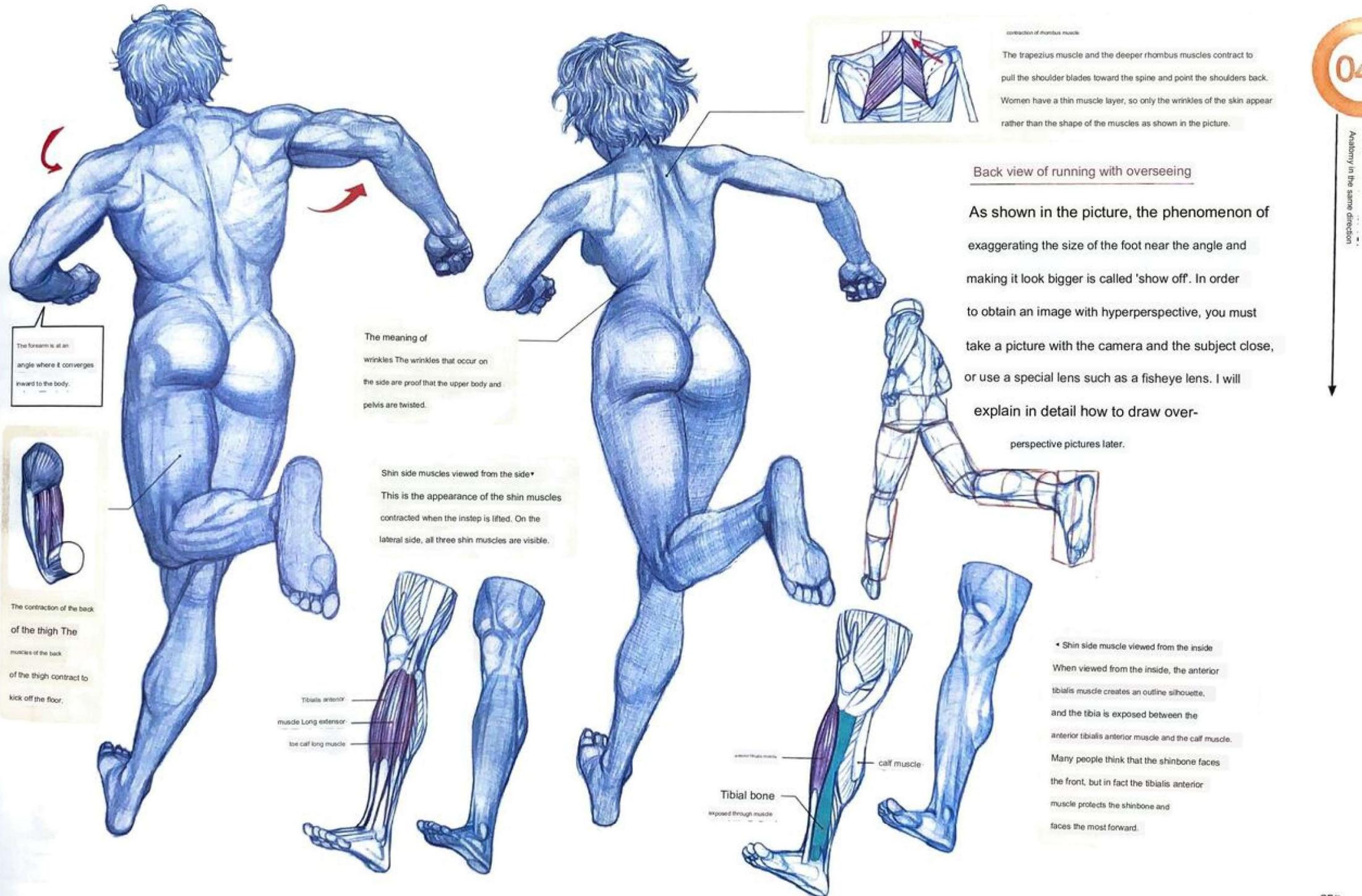
Staggered back-and-forth movement of the long torso and pelvis



up and down movement of the pelvis

The posture in the figure on this page looks like figure 1 when viewed from the front. When you walk or run, you move your shoulders and pelvis back and forth, as well as up and down. In Figure 1, the pelvis did not rise because it was before the weight was placed on the extended leg, but in the next movement, Figure 2, the weight was placed on the leg that was on the floor, and the pelvis went up.

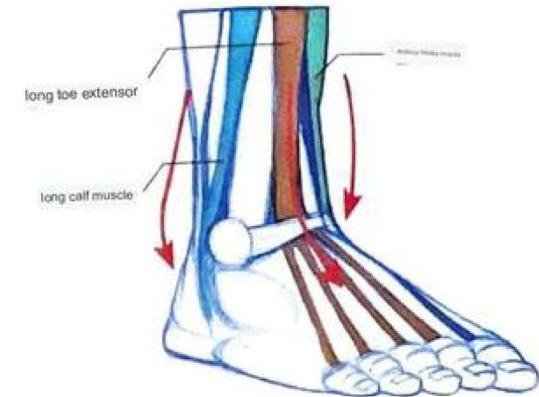
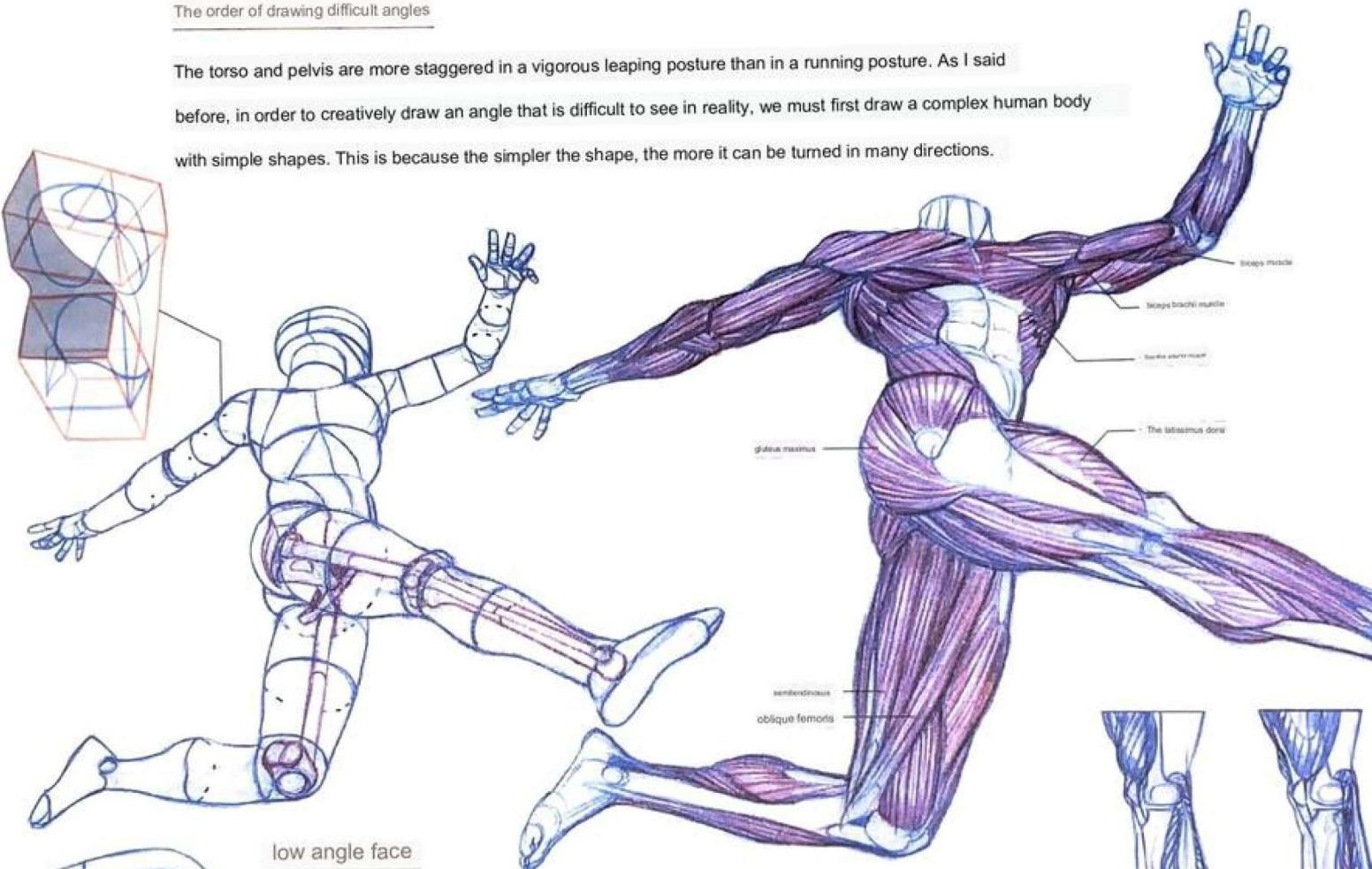
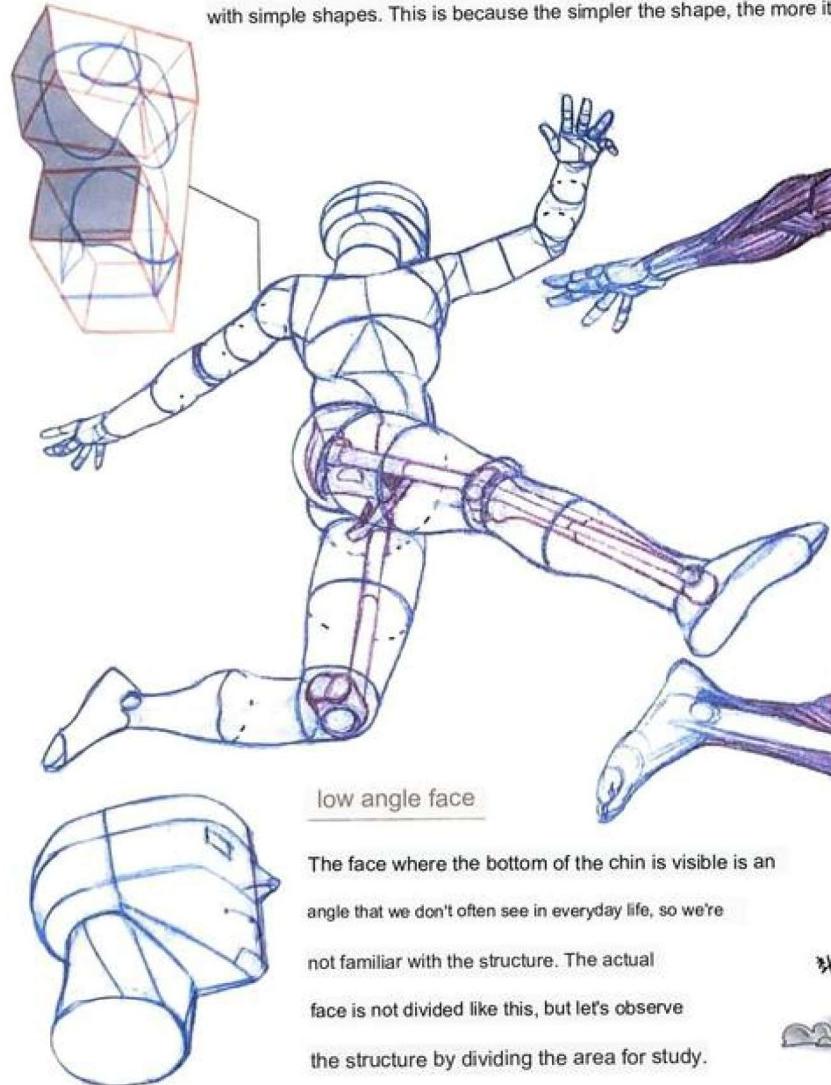




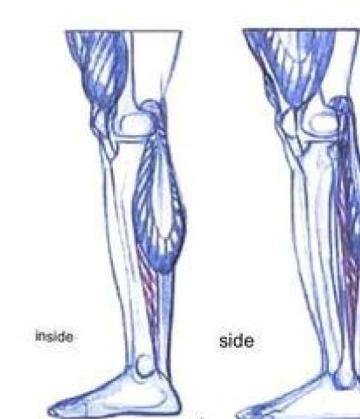
## ■ Long jump posture

### The order of drawing difficult angles

The torso and pelvis are more staggered in a vigorous leaping posture than in a running posture. As I said before, in order to creatively draw an angle that is difficult to see in reality, we must first draw a complex human body with simple shapes. This is because the simpler the shape, the more it can be turned in many directions.



Keep an eye on the orientation of each tendon because tendon orientation creates flow in the ankle. The tendon of the calf long muscle runs behind the malleolus, the tendon of the extensor longus muscle crosses the middle of the foot, and the tendon of the tibialis anterior muscle runs through the middle of the foot. foot toward the big toe It goes into the inner side.



Medial and lateral view of the soleus muscle



A view of the soleus muscle located in the deep layer of the calf muscle

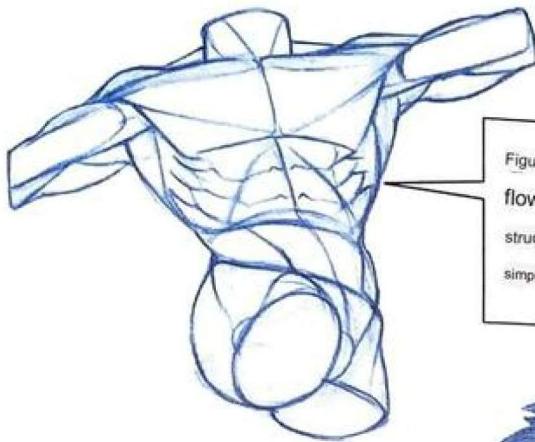
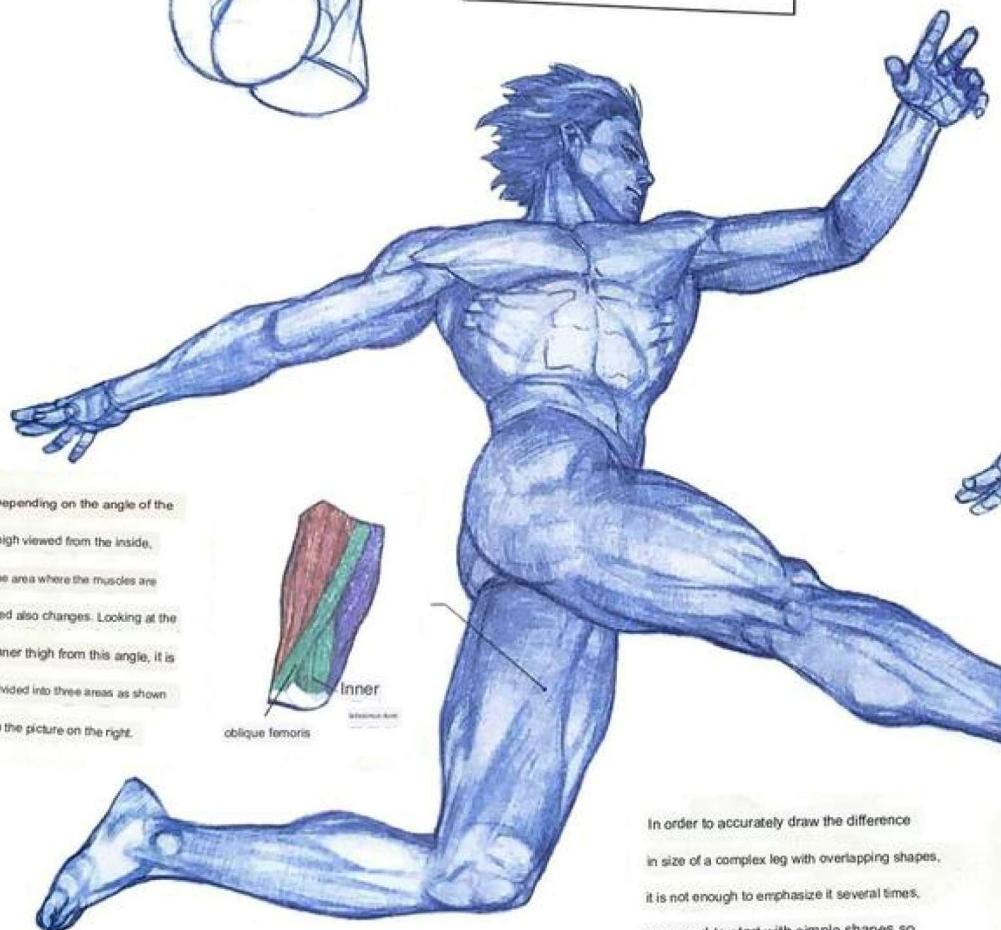
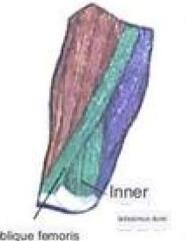


Figure out the exact flow and intertwined structure of muscles simplified with lines!



Depending on the angle of the thigh viewed from the inside, the area where the muscles are tied also changes. Looking at the inner thigh from this angle, it is divided into three areas as shown in the picture on the right.



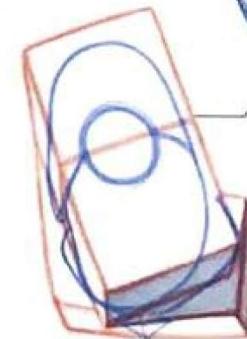
In order to accurately draw the difference in size of a complex leg with overlapping shapes, it is not enough to emphasize it several times. you need to start with simple shapes so that you can focus on size information. As I said repeatedly, the more complicated the structure, the more important it is to look at it simply.

#### Principle of

**motion** The arm moves back and forth in an arc. The legs spur the floor with the opposite centrifugal force of the arms, propelling the body forward.



Deep space As the pectoralis major muscle is lifted, a hollow space like a pocket is created.

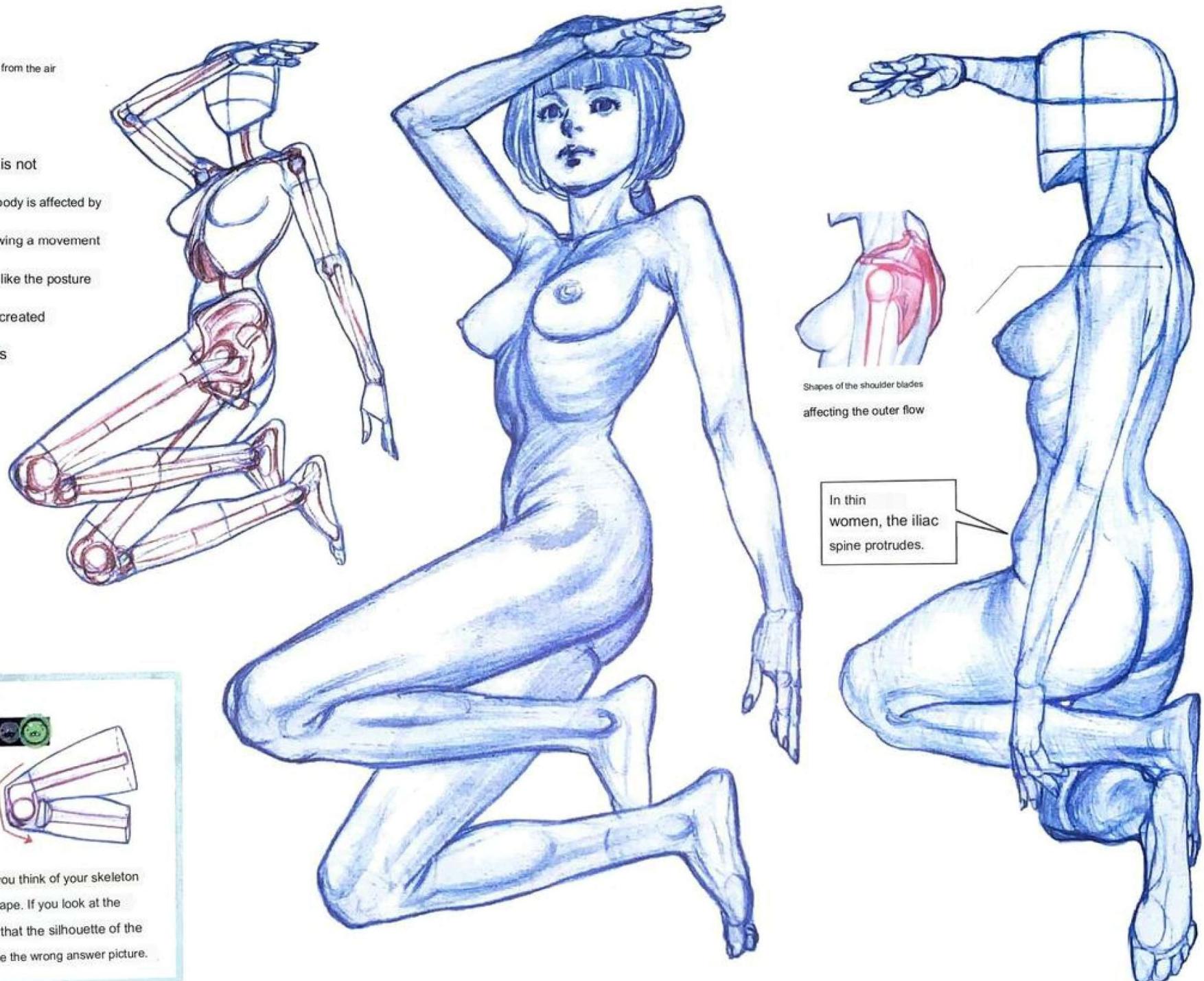


#### 4 aerial application posture

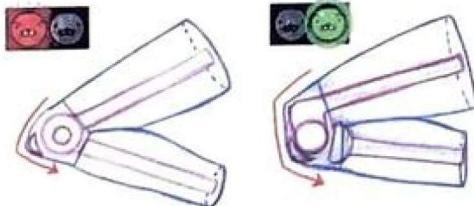
- The attitude of looking into the distance from the air

center of gravity in the air

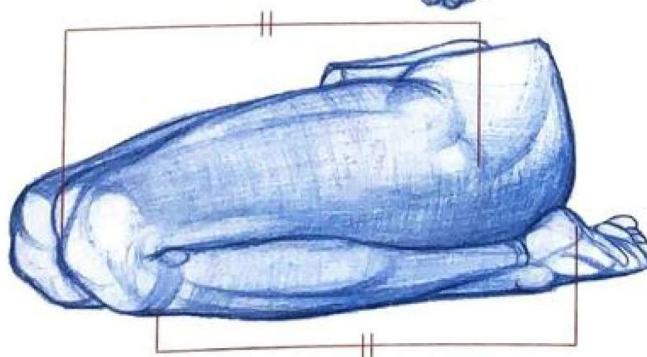
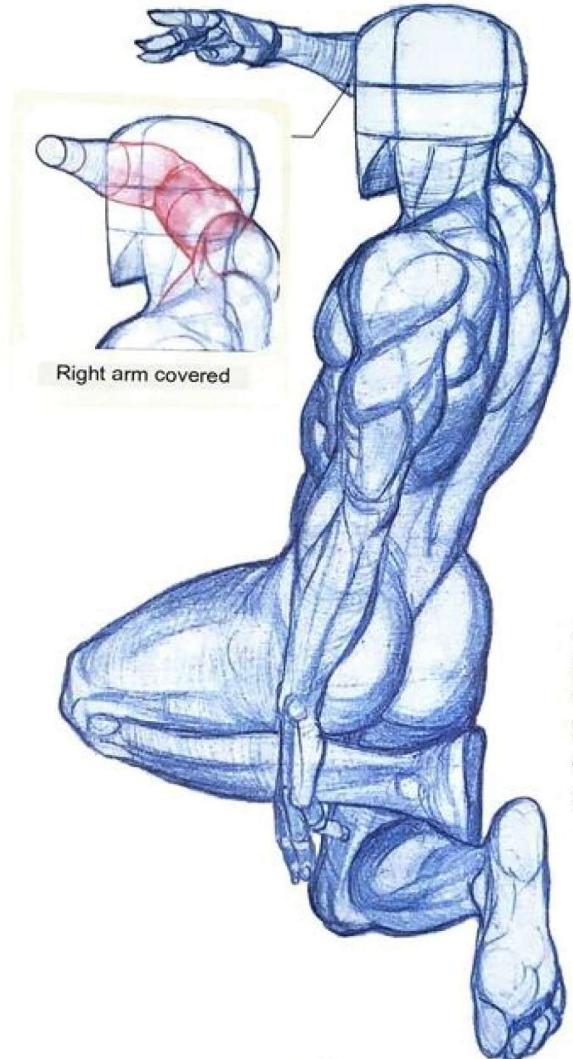
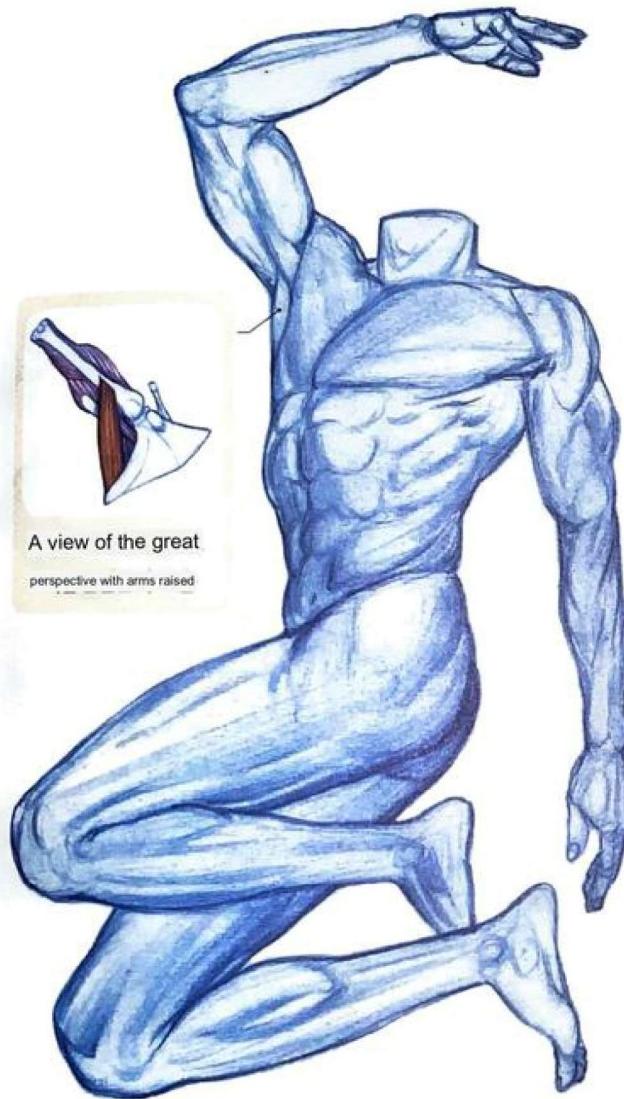
In the air, the center of gravity is not affected, and the flow of the human body is affected by the direction of motion. When showing a movement looking back somewhere in the air like the posture on this page, a natural motion is created when the body direction follows the direction of the gaze rather than just turning the head.



Incorrect answer note The skeleton of the knee



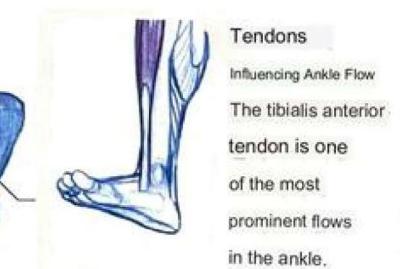
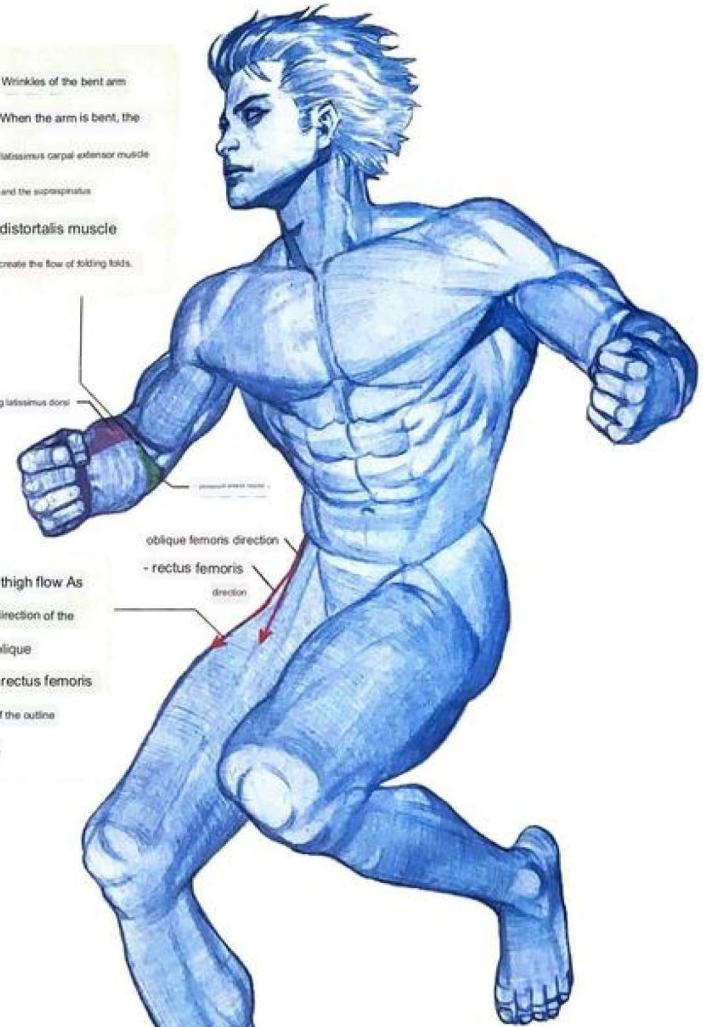
When you bend your knee, how you think of your skeleton makes a lot of difference to its shape. If you look at the figure on the right, you can see that the silhouette of the bent knee is square, not pointed like the wrong answer picture.



Wrinkles of the bent arm  
When the arm is bent, the latissimus carpal extensor muscle and the supraspinatus distalis muscle create the flow of folding folds.

anterior long latissimus dorsi

Changes in thigh flow As shown in the direction of the arrow, the oblique femoris and rectus femoris create the flow of the outline silhouette.



■ Various postures viewed from a low angle

### Shortening phenomenon in low angle

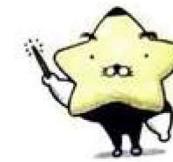
picture 1



picture 2

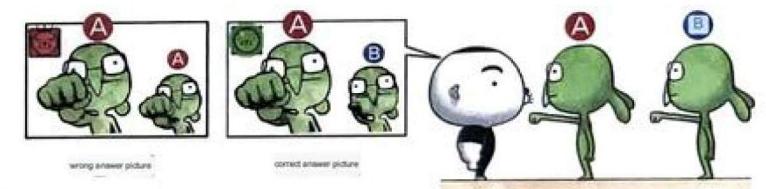
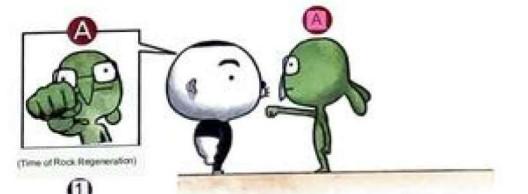
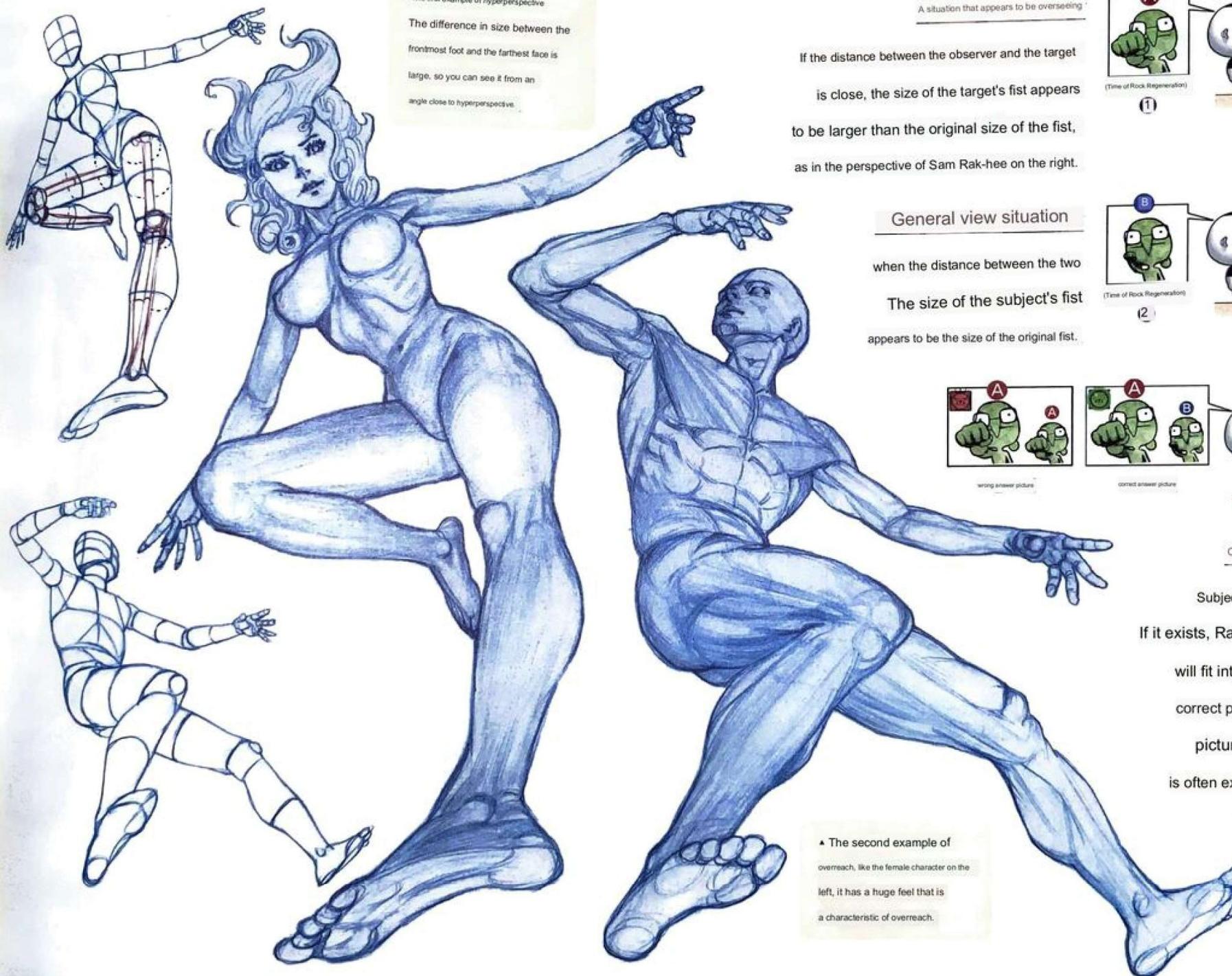


Figures 1 and 2 are viewed from the same angle. Figure 1 definitely has the impression of looking up from below, while Figure 2 is leaning forward, reducing the foreshortening. Even small movements of a character like this can make a big difference in the feel of the angle. Therefore, when drawing a person with various angles, you can draw a more accurate picture by drawing the slope of the angle from the side with a line, as shown in the picture in the box, and checking what angle the character's posture is with the slope of the angle.



#### principle of shortening

As shown in the picture on the left, if you look down at the floor obliquely, the area of the floor is shortened from the observer's point of view, making it appear shorter than its original length. This is because the floor is seen as an oblique line rather than a vertical one. The same principle applied to the low-angle and high-angle angles as seen from the oblique line causes them to appear shorter than the original length.

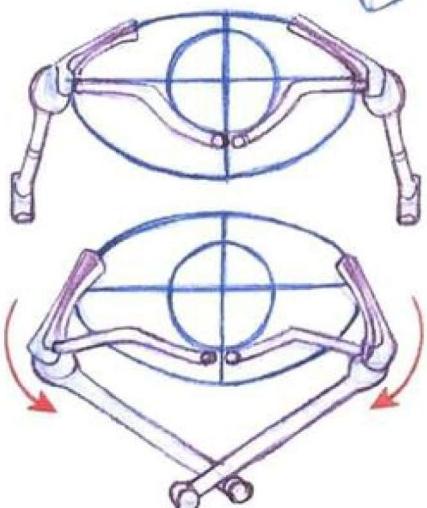
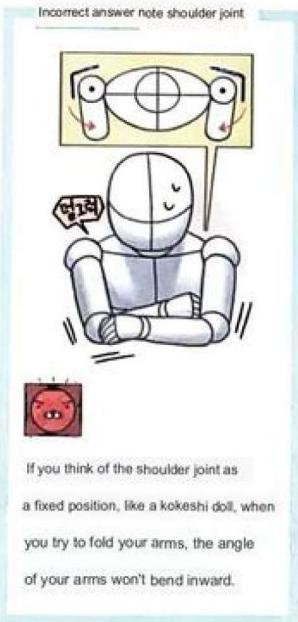


#### Coexistence of oversight and general vision

Subjects A and B are in the same space. If it exists, Rakhee Sam's visions 1 and 2 will fit into one space and look like the correct picture. Like the wrong answer picture, the ratio of both subjects is often expressed as , so use oversight according to the situation!

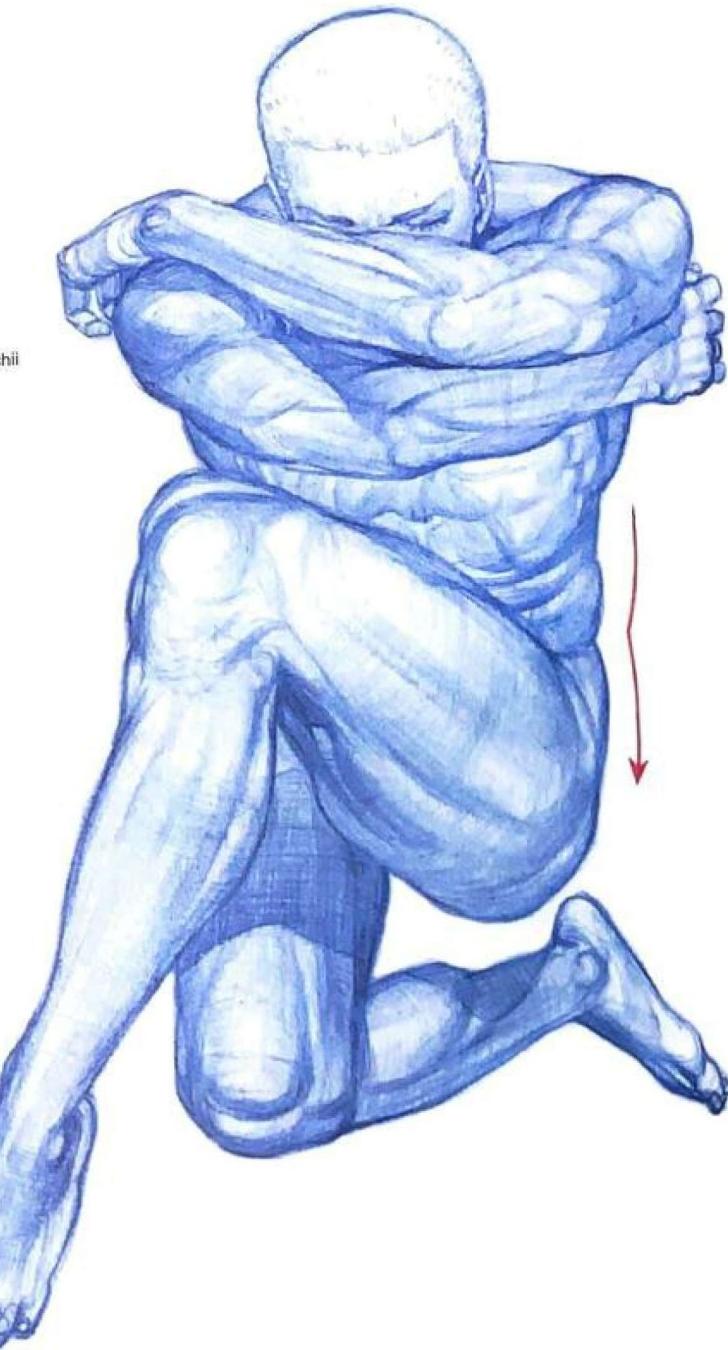
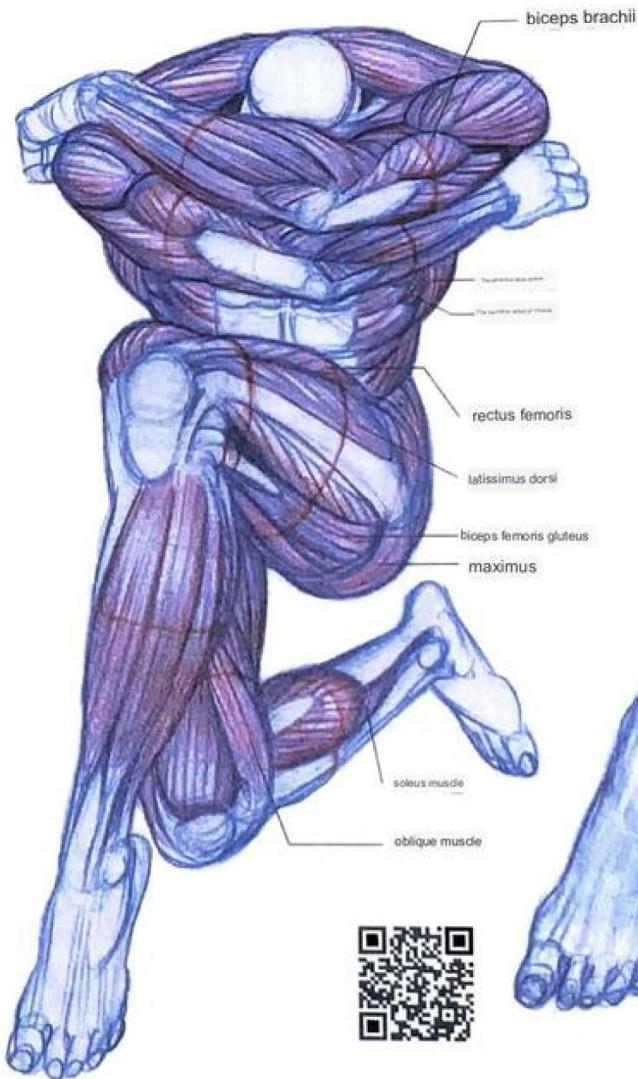


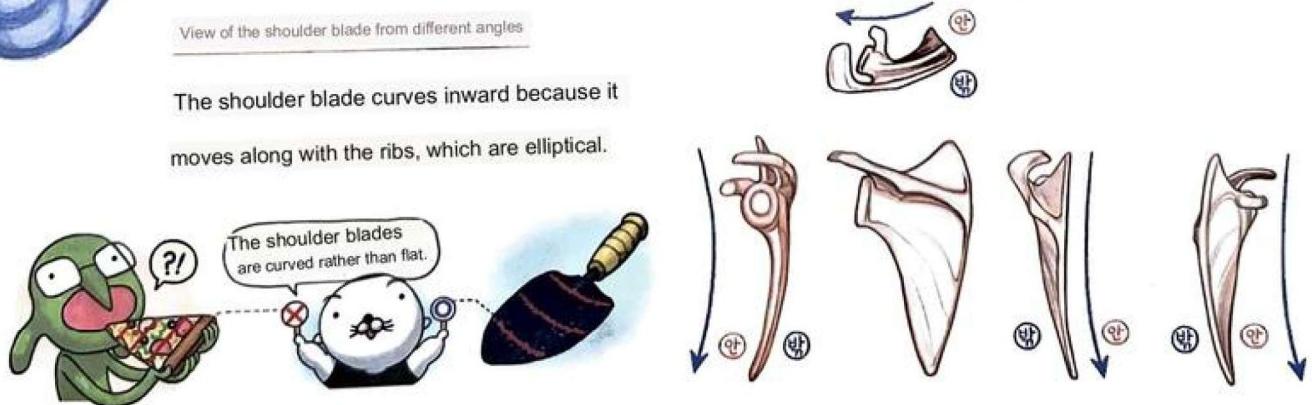
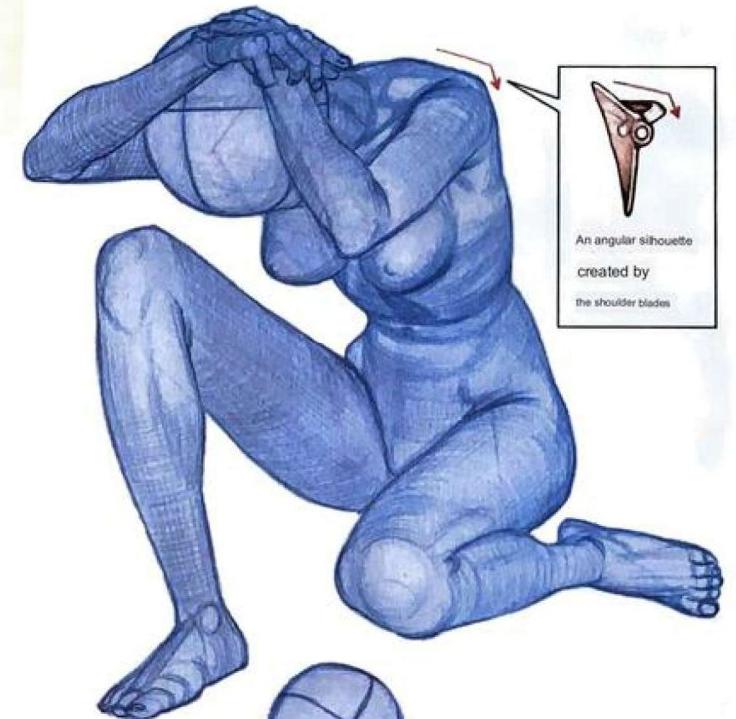
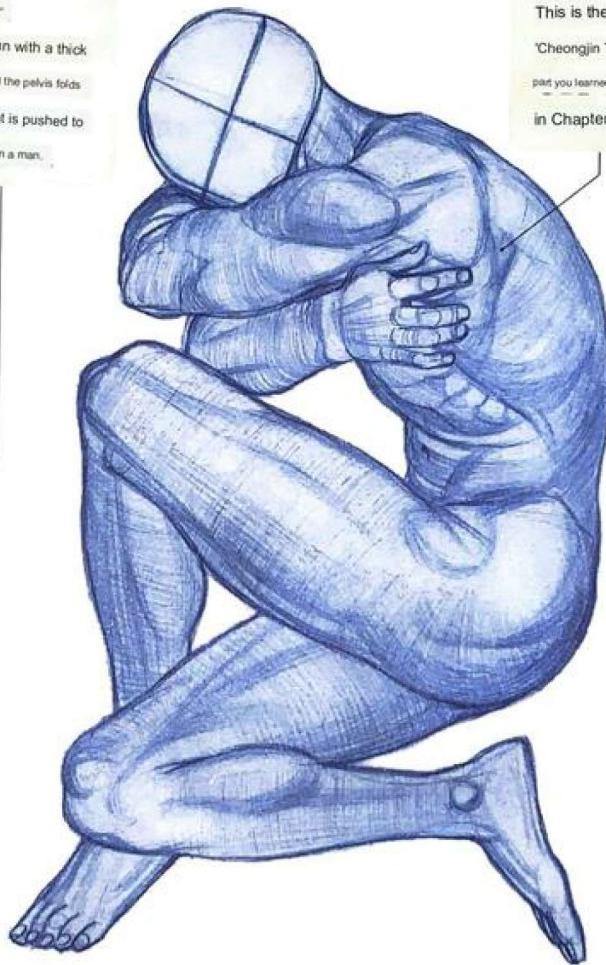
## ■ Crouching Aerial Pose



Bring your arms inward as much as possible and crouch down

It is a posture that allows you to think about how far the limit of the angle is and how much the flesh is pressed when you pull your arms with all your might and cross them.





■ Aerial posture with the body bent forward

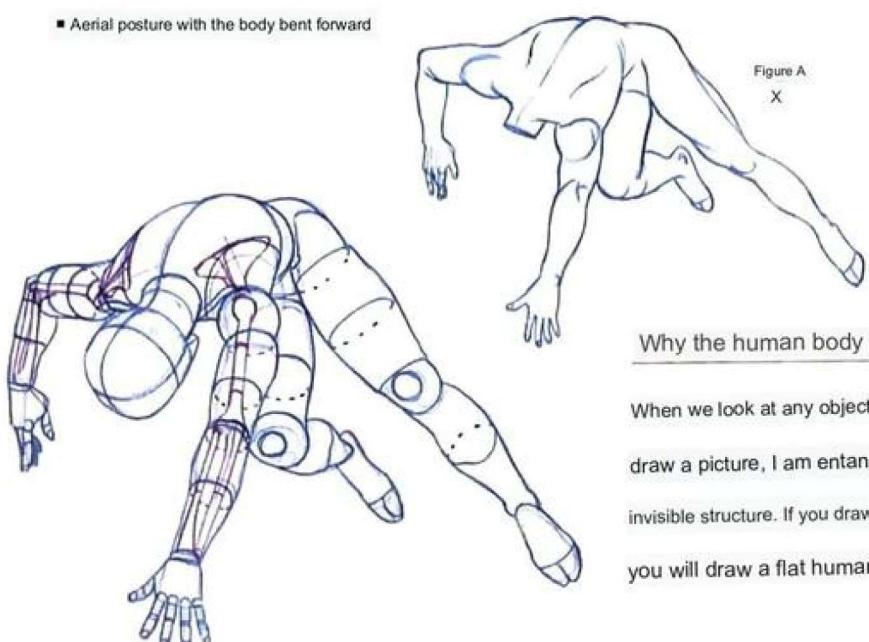
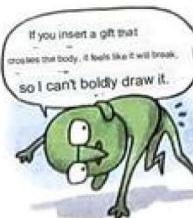
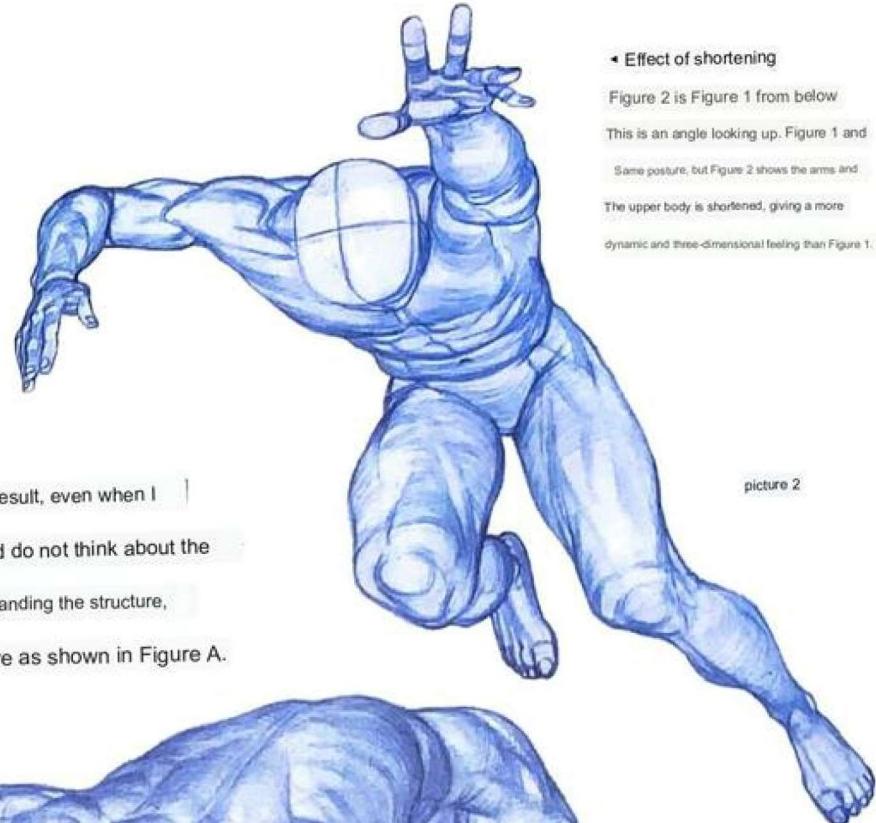


Figure A  
X

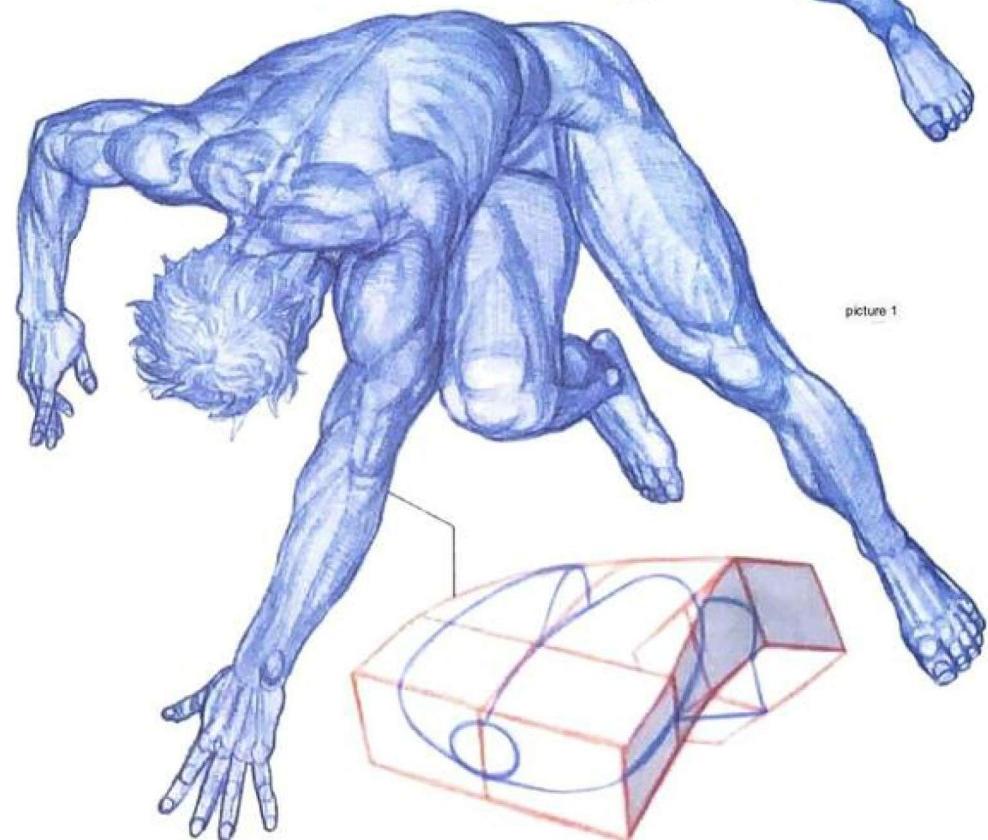


#### Why the human body is drawn flat

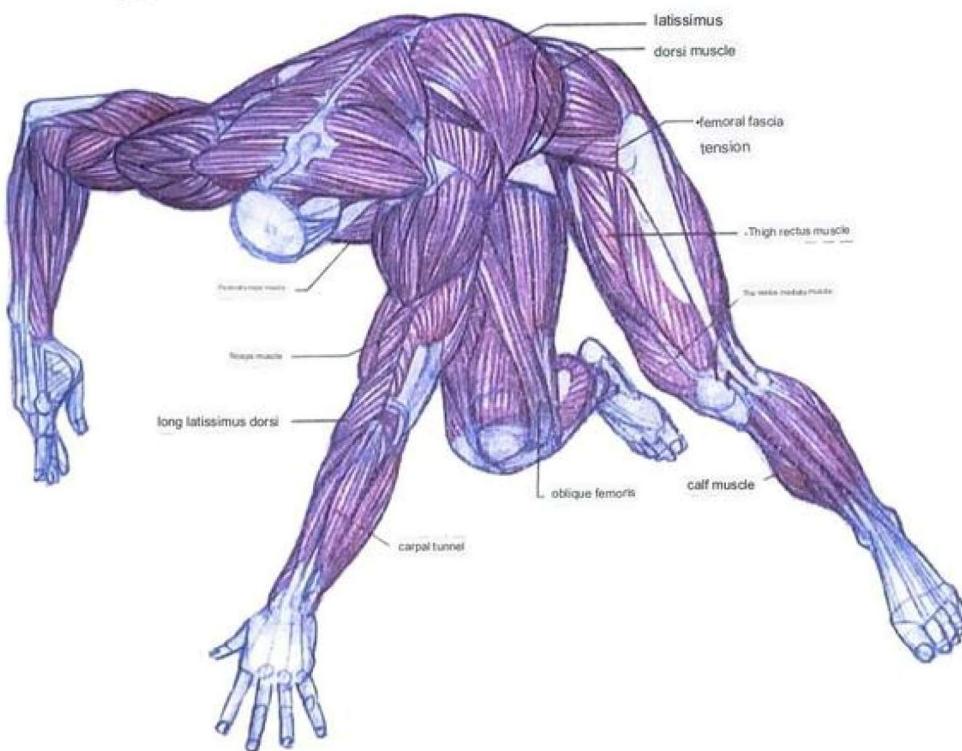
When we look at any object, we see its silhouette first. As a result, even when I draw a picture, I am entangled in the outline silhouette and do not think about the invisible structure. If you draw mainly silhouettes without understanding the structure, you will draw a flat human body with an unclear structure as shown in Figure A.



picture 2



picture 1



◀ Effect of shortening

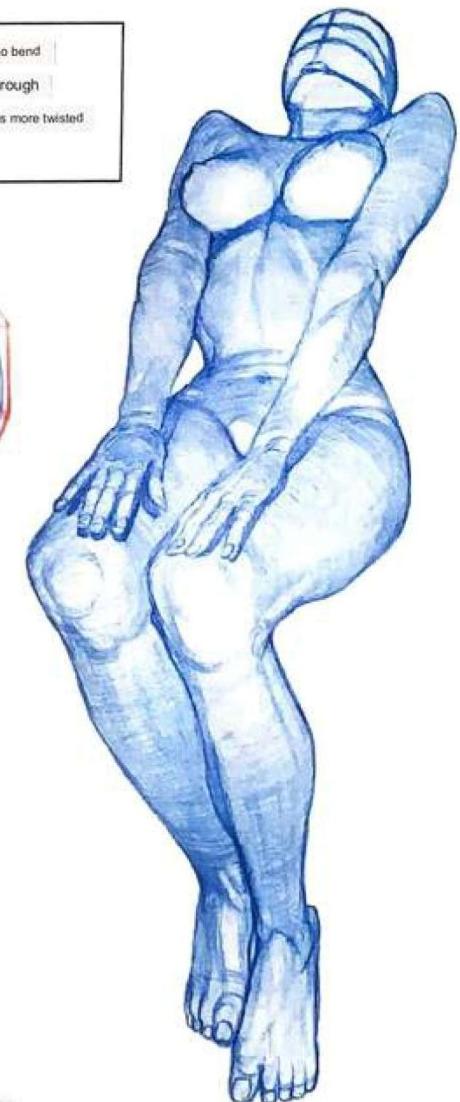
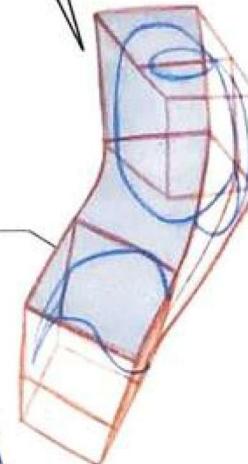
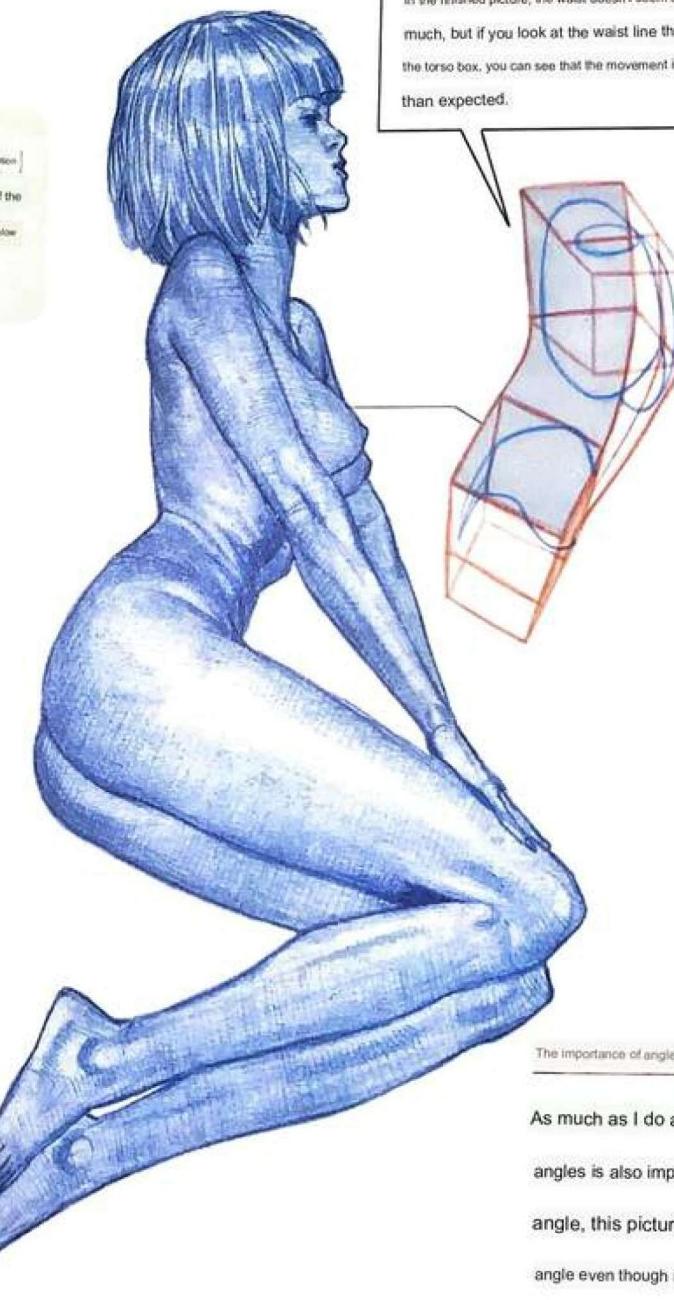
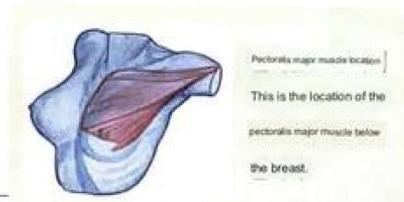
Figure 2 is Figure 1 from below

This is an angle looking up. Figure 1 and

Same posture, but Figure 2 shows the arms and

The upper body is shortened, giving a more

dynamic and three-dimensional feeling than Figure 1.

**■ Aerial posture with a feminine flow**

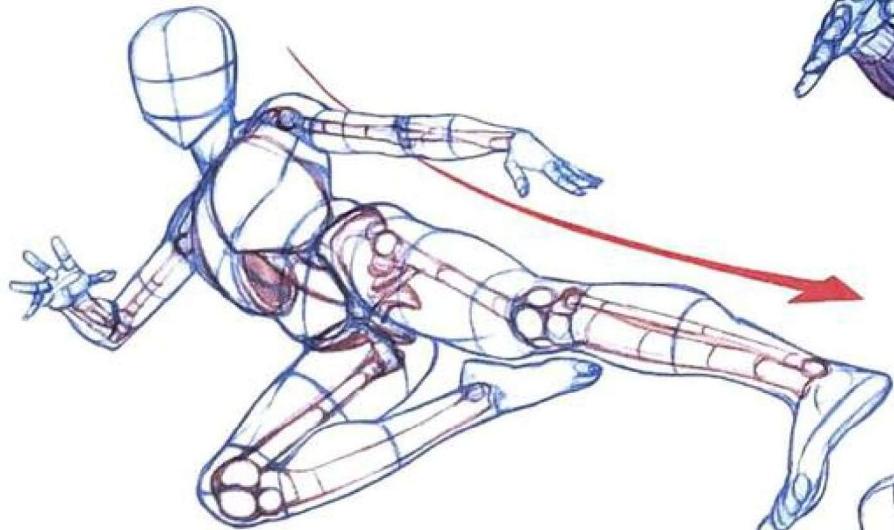
The importance of angles

As much as I do a lot of research on good posture, research on angles is also important. Looking at the picture on the left from a low angle, this picture gives a different feeling due to the change in angle even though it is the same posture.

## ■ Flying Kick Stance

### Characteristics of flying kick posture

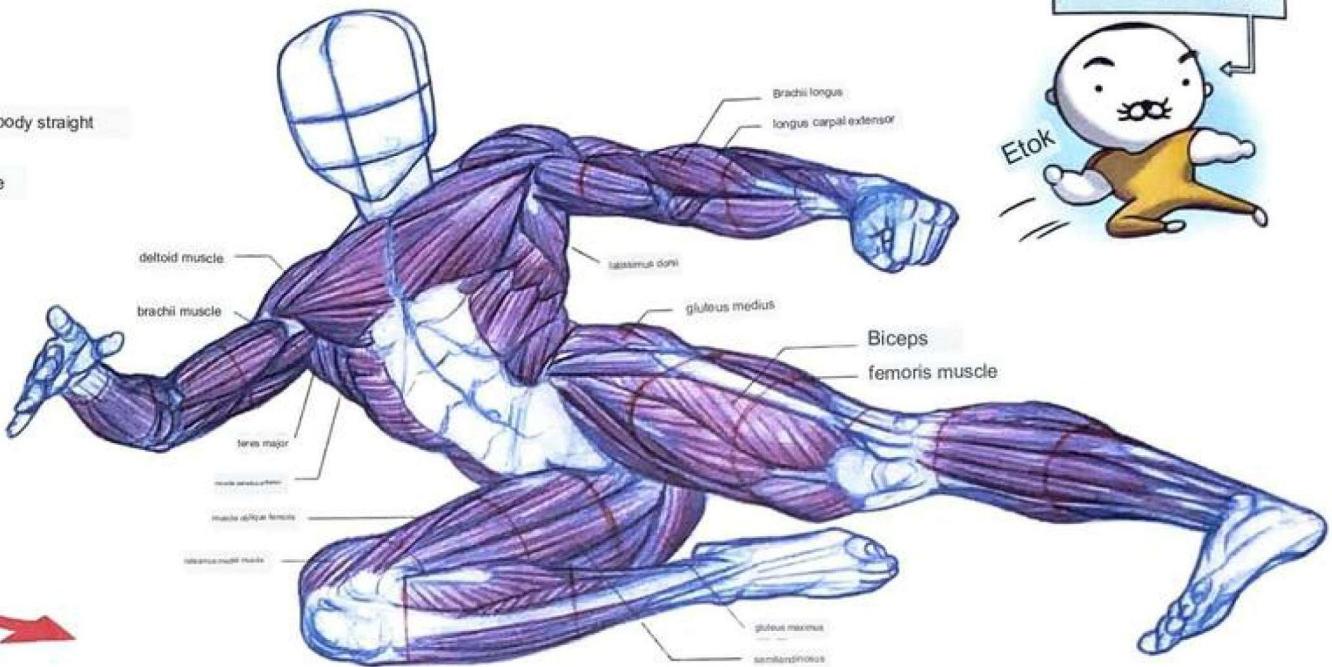
It is a posture in which you run forward, jump with your body crouched down, then stretch your body straight out and gather the power of running and straightening your body into your toes to strike the opponent. The characteristic of this movement is that the flow of the waist bent back like the flow of an arrow is connected to the legs extended in a straight line. biceps



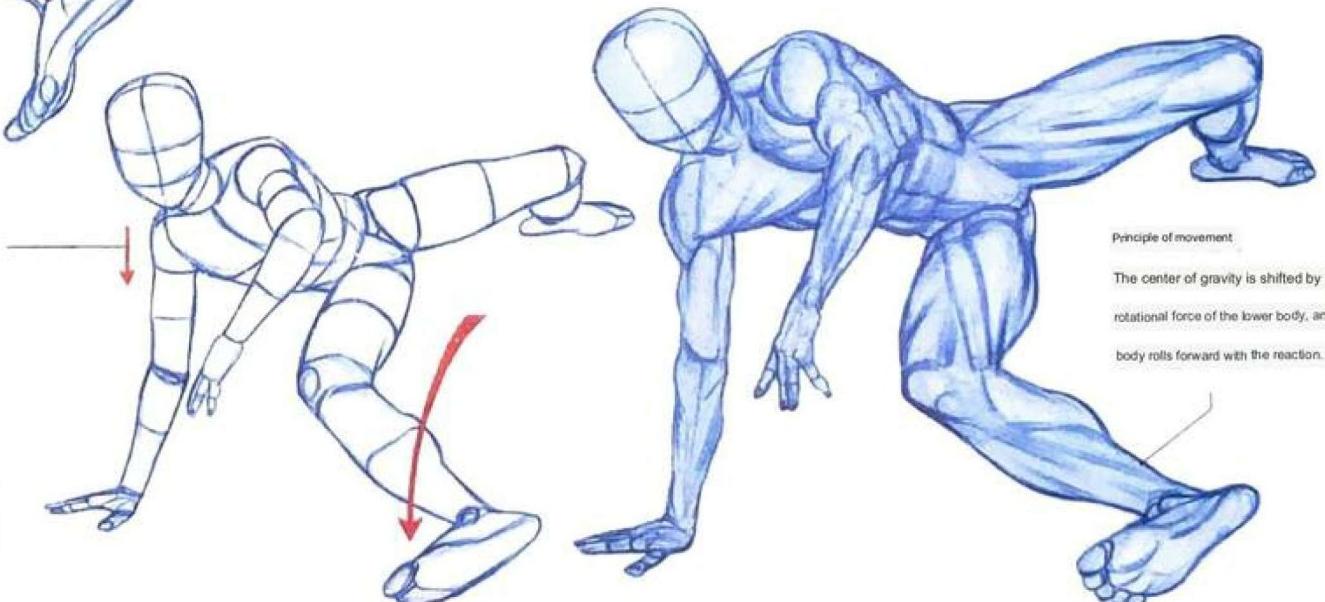
Why is the shoulder on the floor not raised?



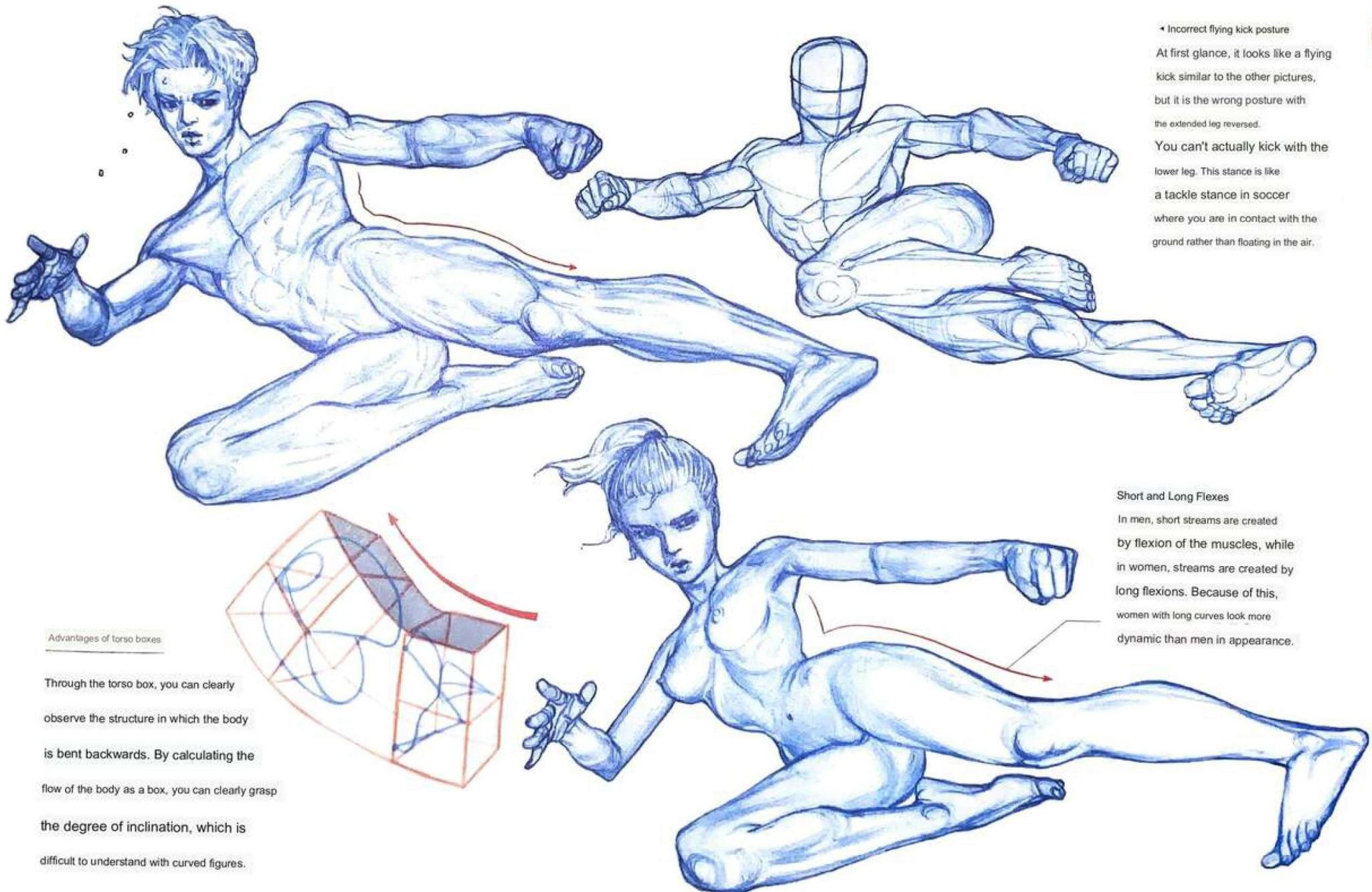
Just because your arms are on the floor doesn't mean that your shoulders go up unconditionally, but the movement of your shoulders also changes depending on the situation. In this position, your shoulders should not go down because the arms that are resting on the floor play a role in pushing your body off the ground.



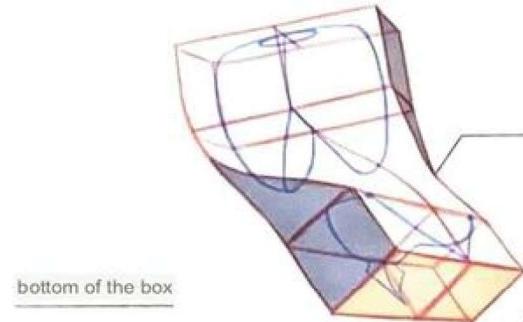
Today, Sam Rak-hee tries to pose himself.



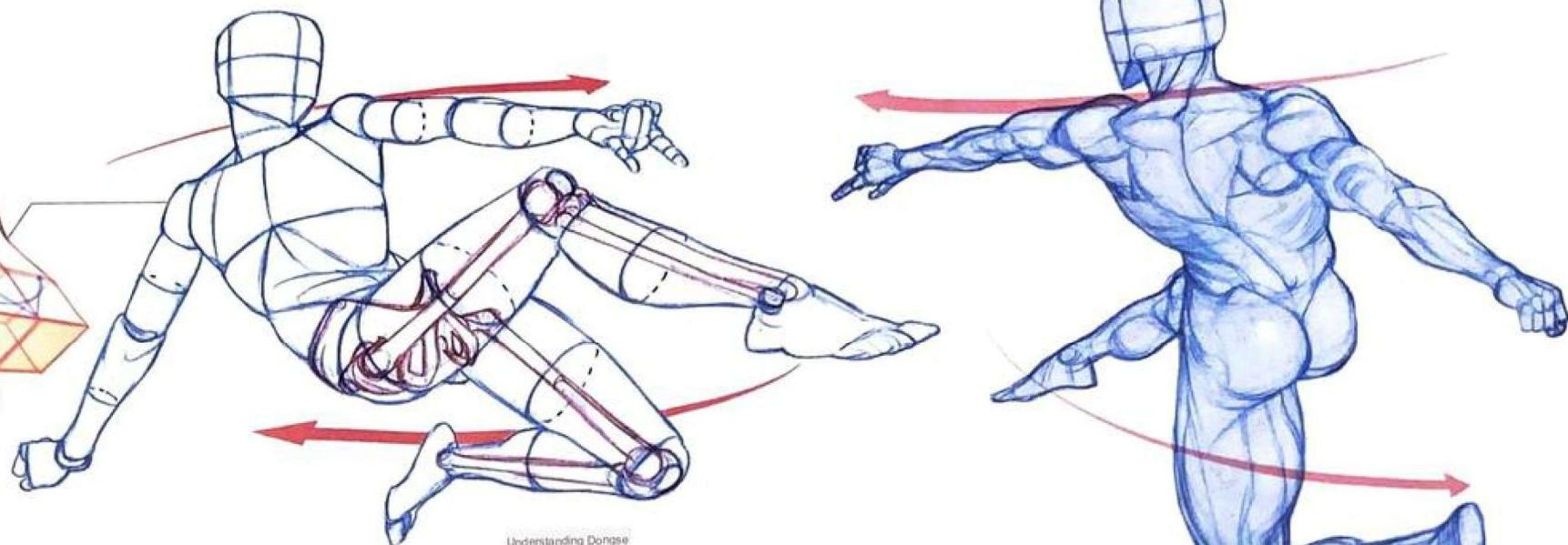
Principle of movement  
The center of gravity is shifted by the rotational force of the lower body, and the body rolls forward with the reaction.



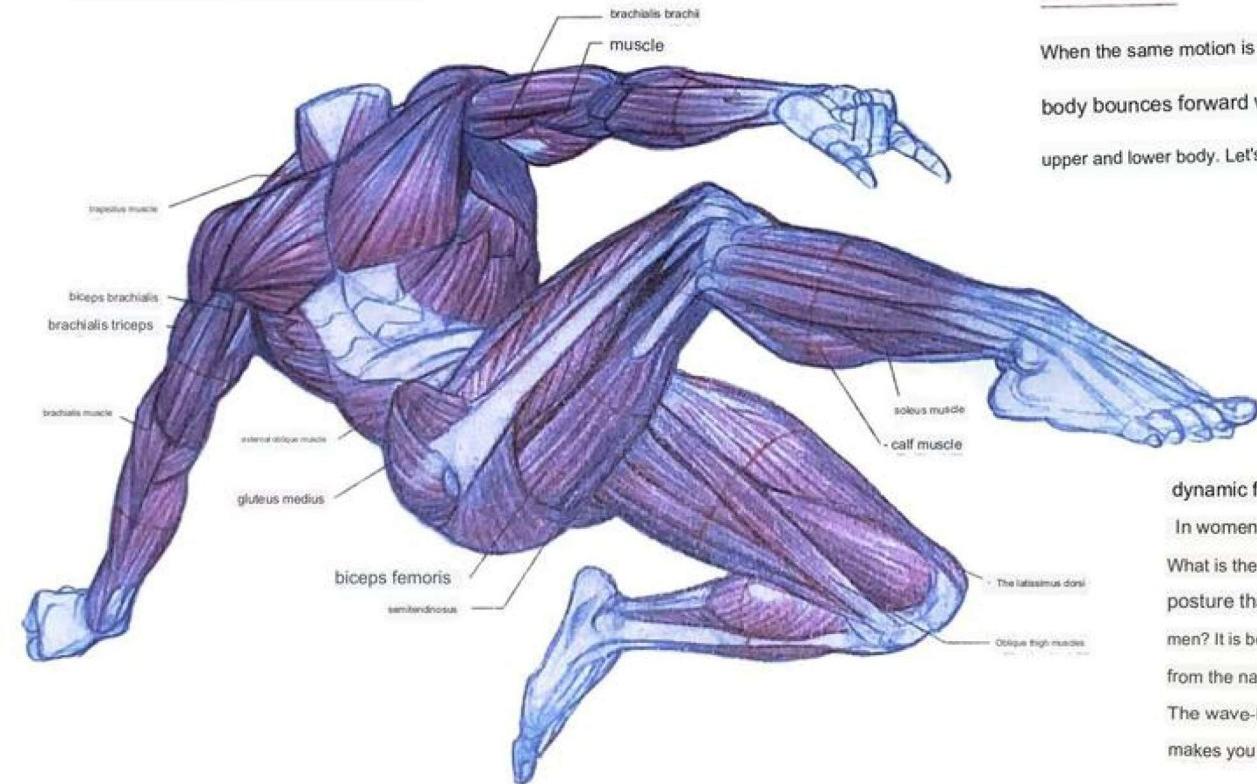
■ Arms stretched forward in the air



If you can see the bottom of the pelvis box, it means that it is close to the low angle. Check how much of the bottom of the pelvis box is visible in any position.

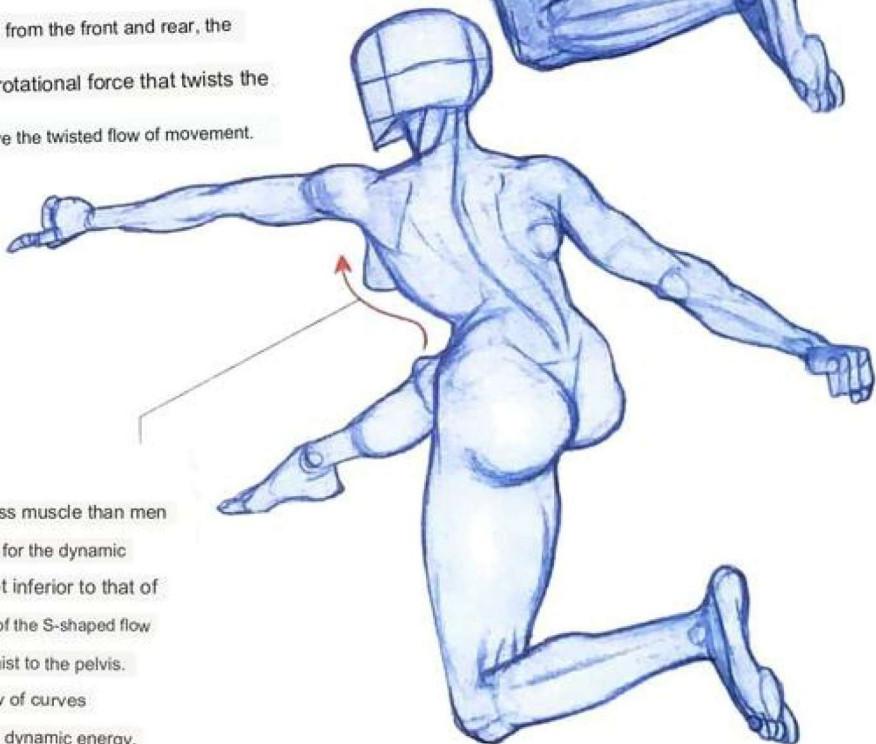


When the same motion is viewed from the front and rear, the body bounces forward with a rotational force that twists the upper and lower body. Let's observe the twisted flow of movement.



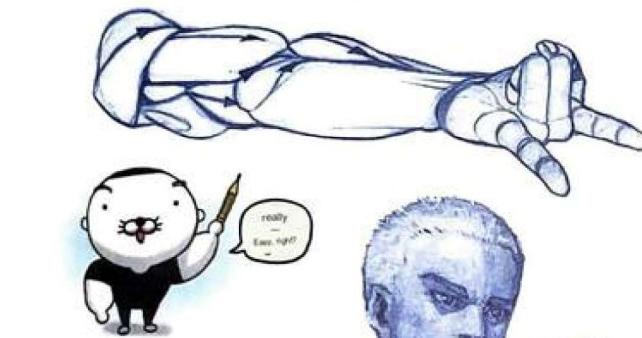
dynamic flow

In women with less muscle than men, what is the reason for the dynamic posture that is not inferior to that of men? It is because of the S-shaped flow from the narrow waist to the pelvis. The wave-like flow of curves makes you feel the dynamic energy.

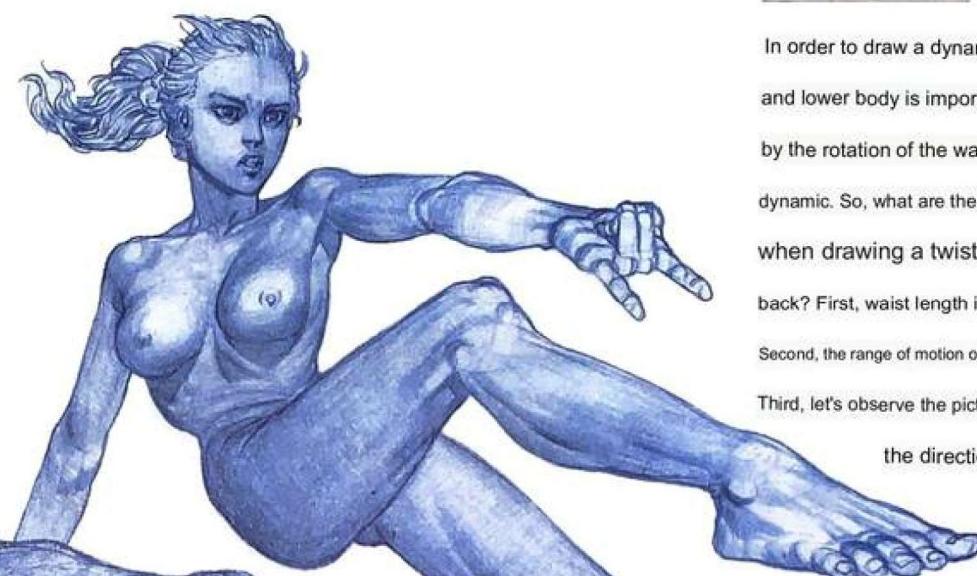


**Understanding Shapes with Flow\***

To understand the shape of the shortened arm extended forward, let's simplify the muscles and observe the flow of curves.



Compare the positions marked with the structure color of the knee to see how the bone shape appears outwardly.

**Draw a Twisted Waist**

In order to draw a dynamic posture, twisting of the upper and lower body is important. The curve created by the rotation of the waist makes the human body the most dynamic. So, what are the three things you need to know when drawing a twisted back? First, waist length in a twisted state. Second, the range of motion of the rotating waist. Third, let's observe the pictures on this page in three orders:

the direction of the wrinkles on the waist and the shape of the muscles.

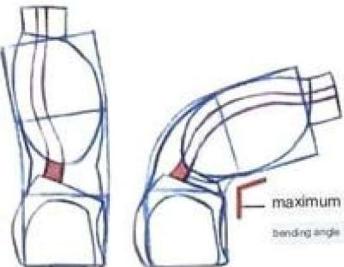


Observe the shape of the foot viewed from below.



Observe the same posture of the waist from different angles and understand the shape in three dimensions.

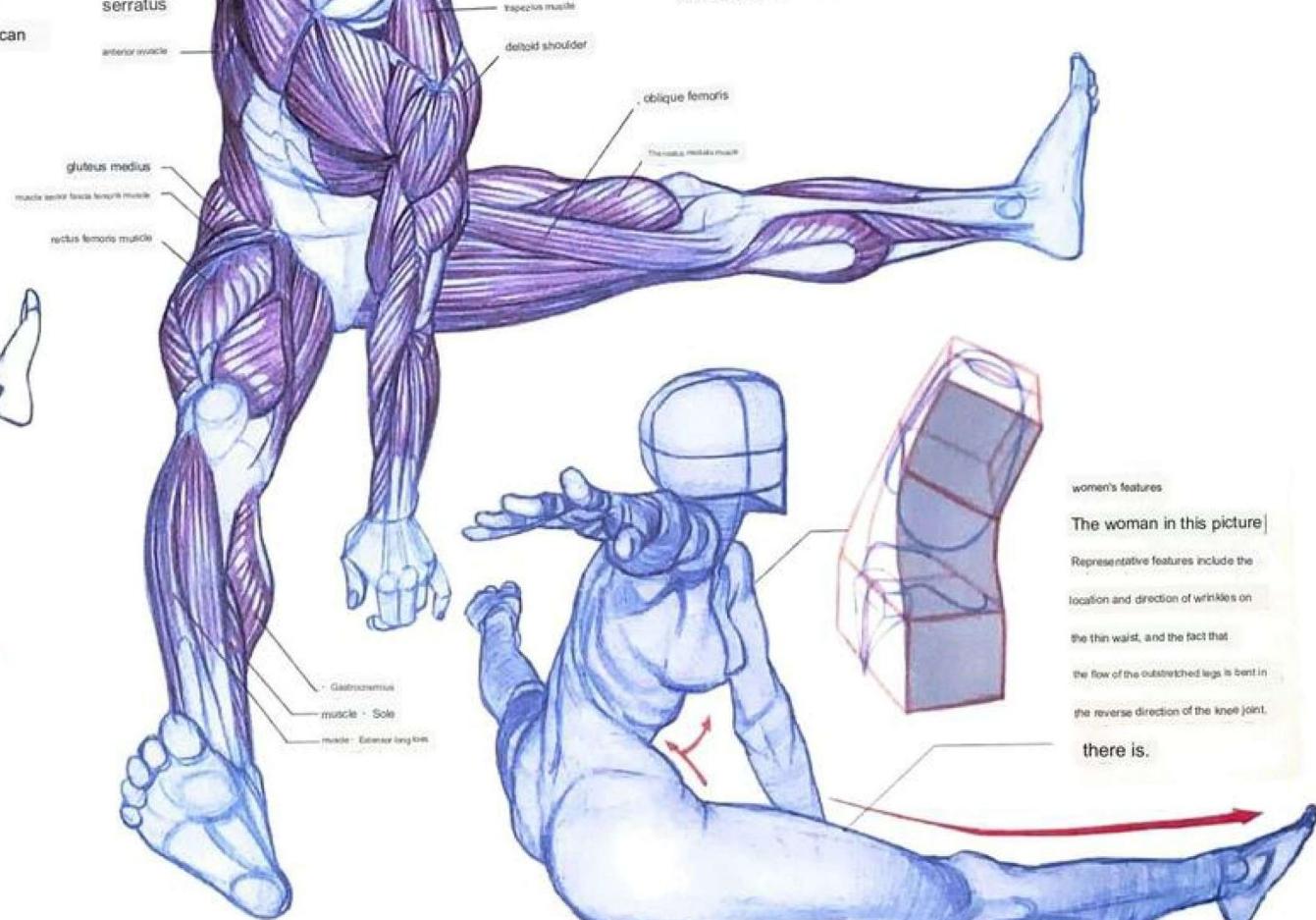
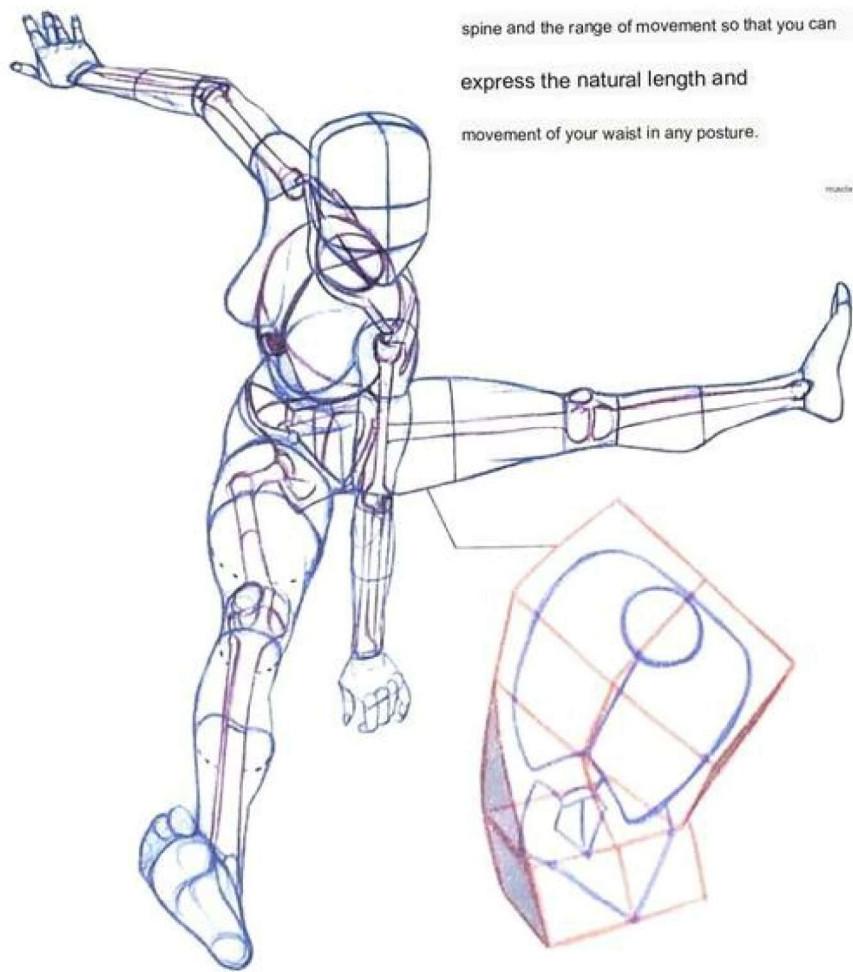
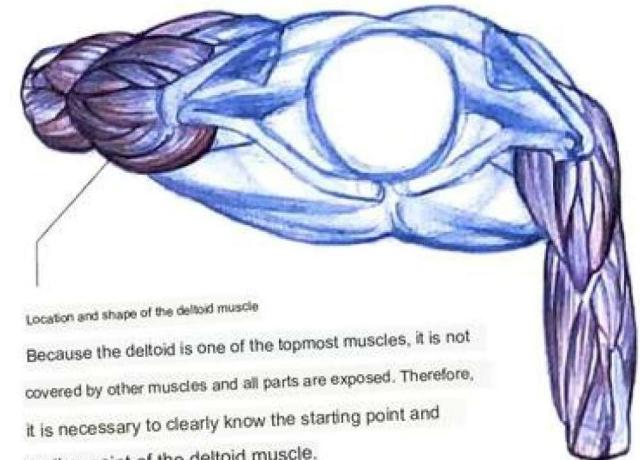
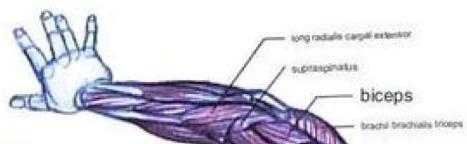
## ■ Jump over obstacles



The spine, which is the standard for waist length

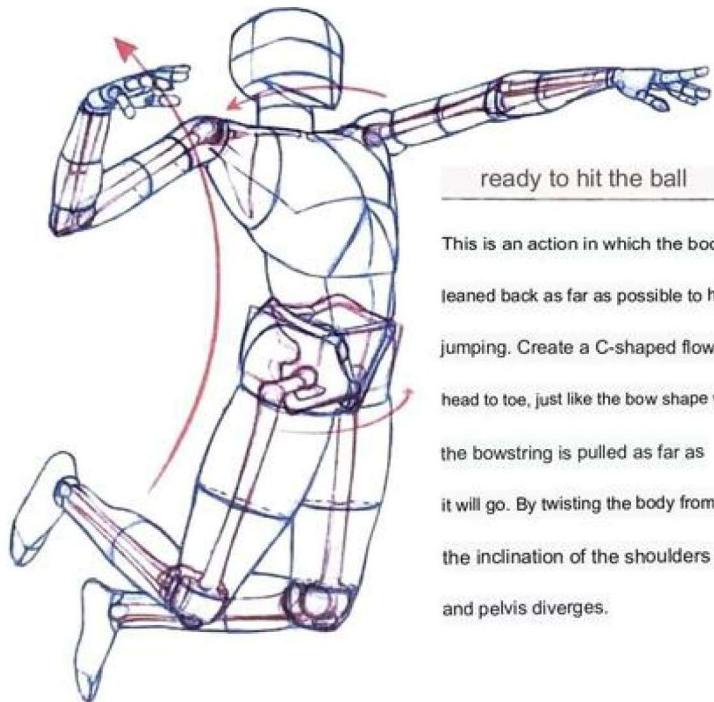
The skin area of the stomach and back is

It depends on your movement. But  
the length of the spine does not change. You  
need to know exactly the position of the  
spine and the range of movement so that you can  
express the natural length and  
movement of your waist in any posture.



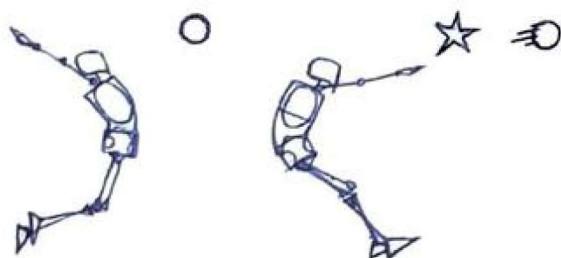


■ Volleyball posture



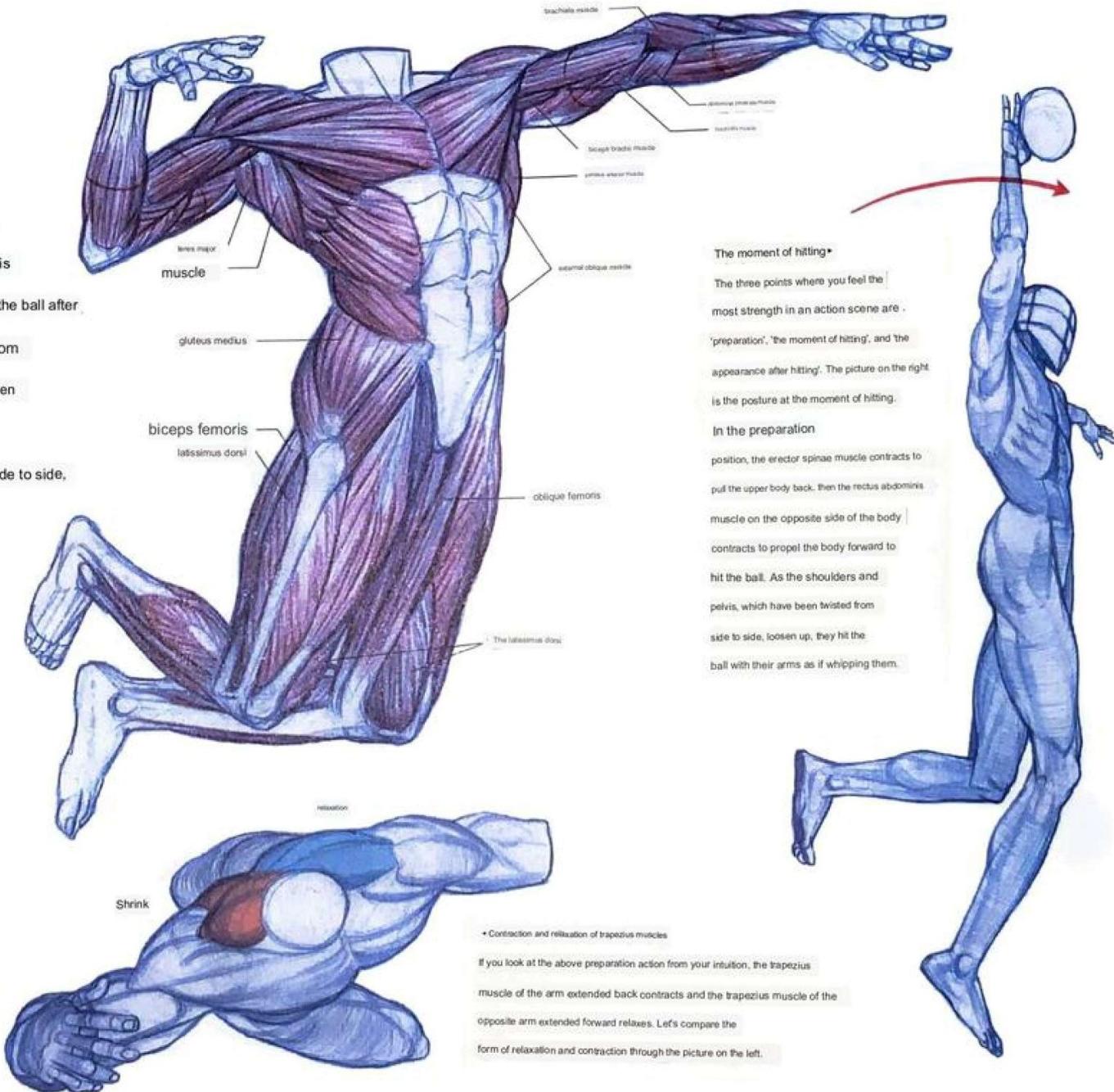
ready to hit the ball

This is an action in which the body is leaned back as far as possible to hit the ball after jumping. Create a C-shaped flow from head to toe, just like the bow shape when the bowstring is pulled as far as it will go. By twisting the body from side to side, the inclination of the shoulders and pelvis diverges.



throwing the ball

It bends its body backwards like a bow and then bounces the ball forward with the maximum power gathered. The flow of the body bent in the shape of a C forms a C shape in the opposite direction after the blow. In the airborne position, the direction of force is more important than the center of gravity.



The moment of hitting\*

The three points where you feel the most strength in an action scene are 'preparation', 'the moment of hitting', and 'the appearance after hitting'. The picture on the right is the posture at the moment of hitting.

In the preparation

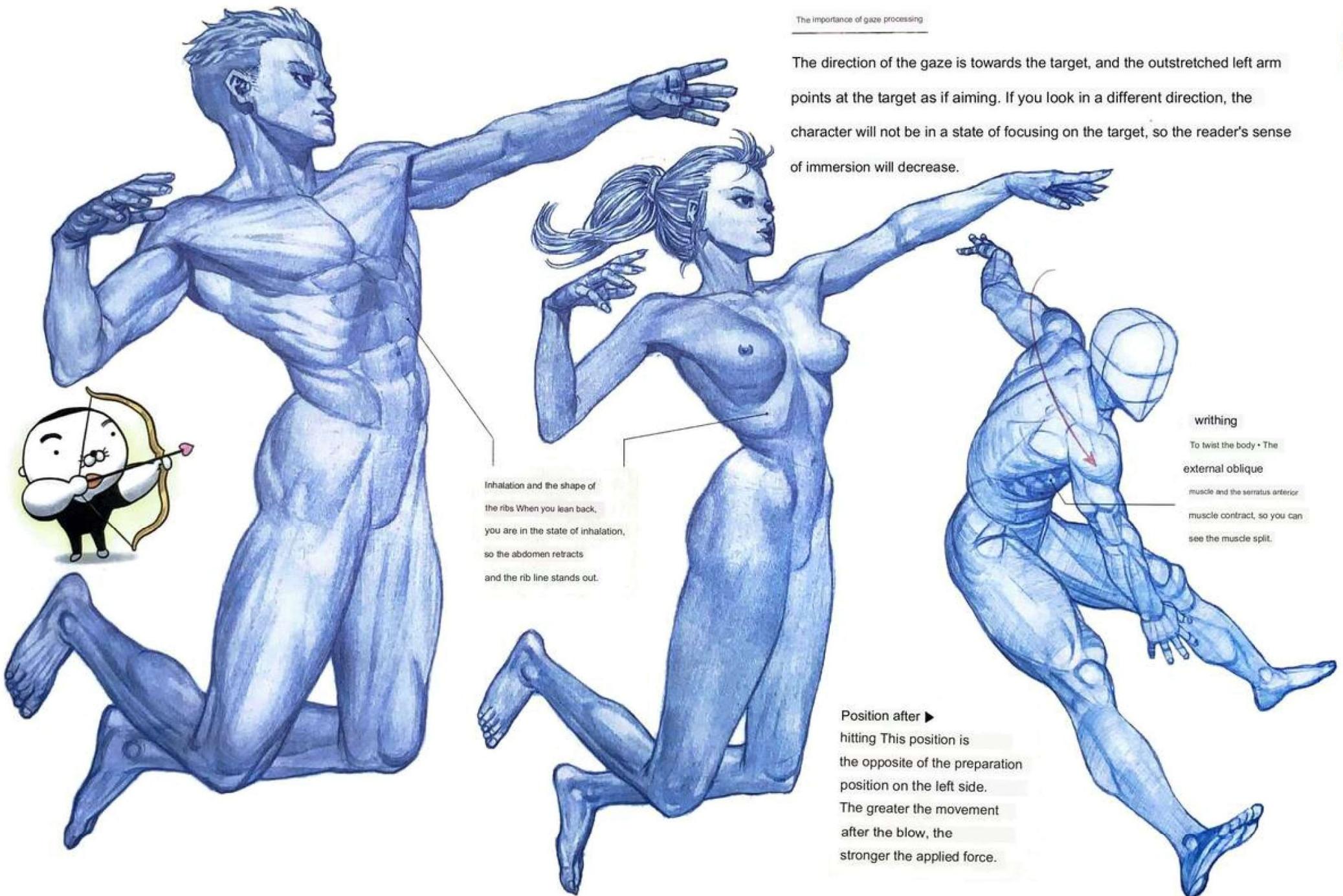
position, the erector spinae muscle contracts to pull the upper body back, then the rectus abdominis muscle on the opposite side of the body contracts to propel the body forward to hit the ball. As the shoulders and pelvis, which have been twisted from side to side, loosen up, they hit the ball with their arms as if whipping them.

\* Contraction and relaxation of trapezius muscles

If you look at the above preparation action from your intuition, the trapezius muscle of the arm extended back contracts and the trapezius muscle of the opposite arm extended forward relaxes. Let's compare the form of relaxation and contraction through the picture on the left.

## The importance of gaze processing

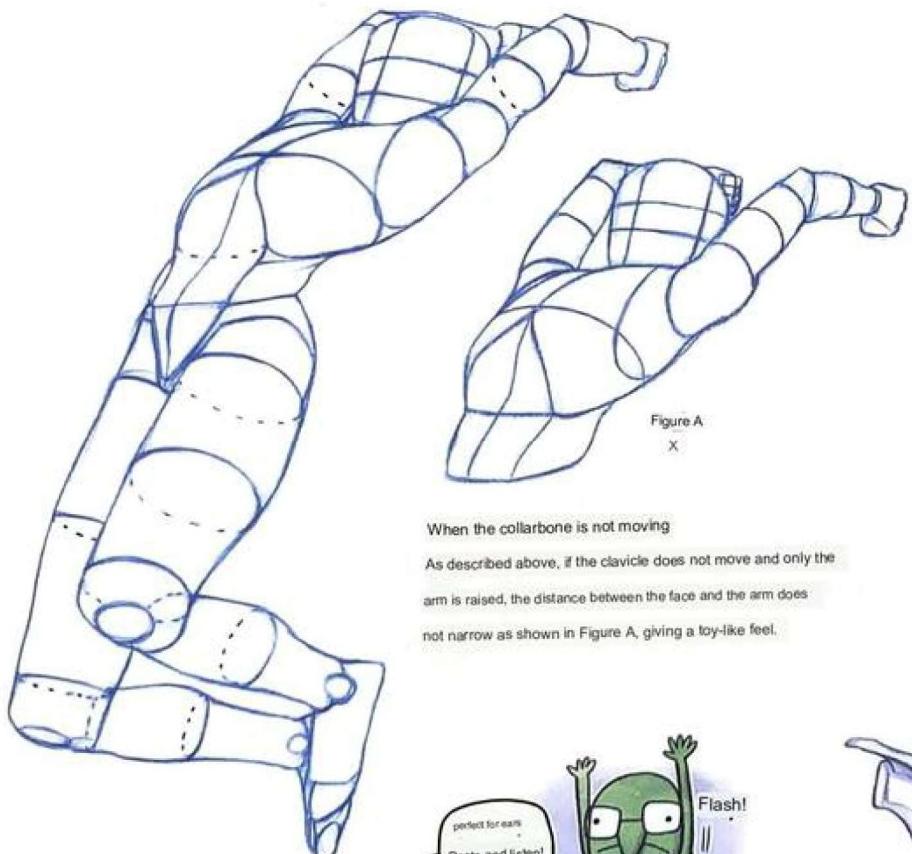
The direction of the gaze is towards the target, and the outstretched left arm points at the target as if aiming. If you look in a different direction, the character will not be in a state of focusing on the target, so the reader's sense of immersion will decrease.



■ Jump posture

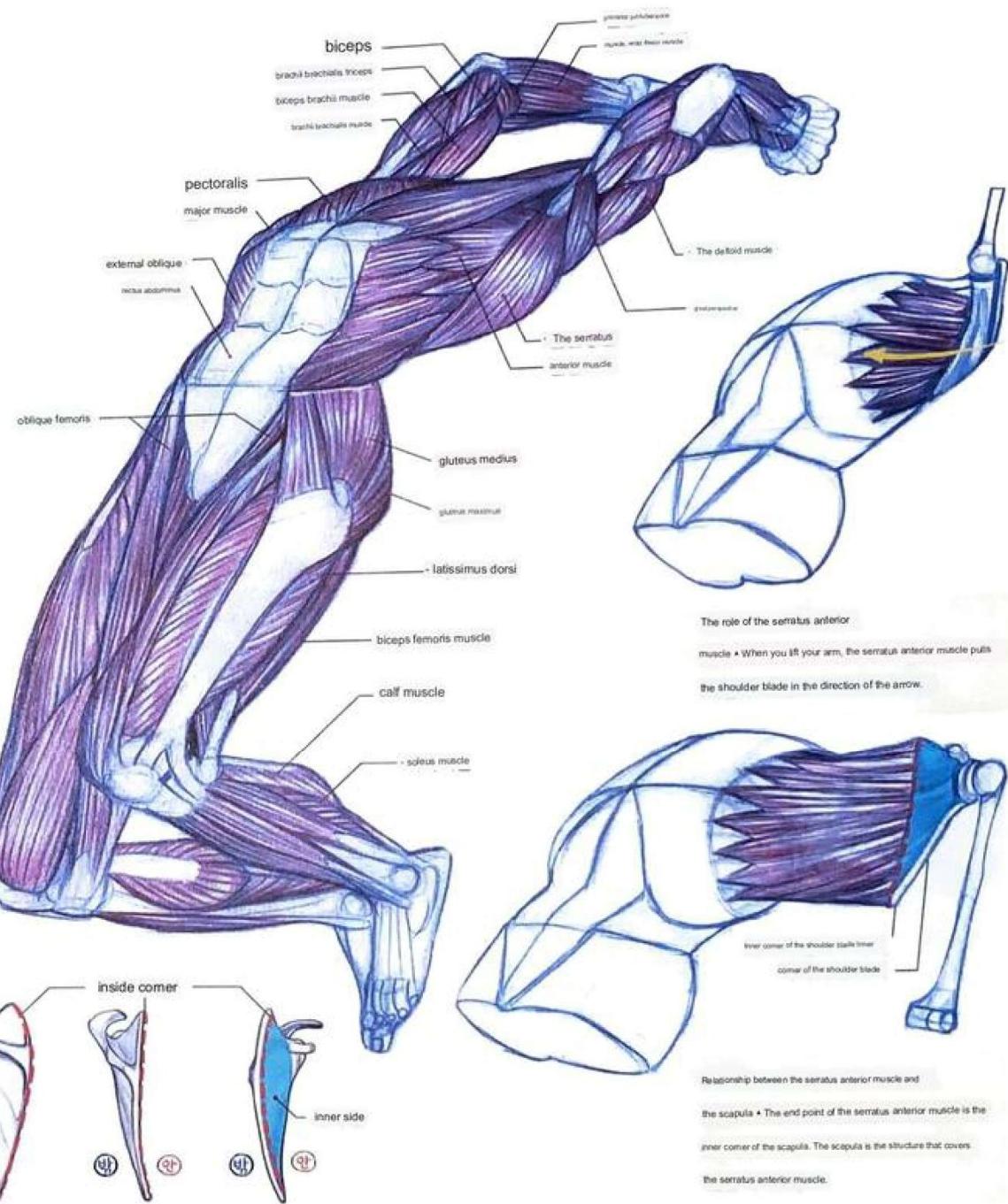
backward posture

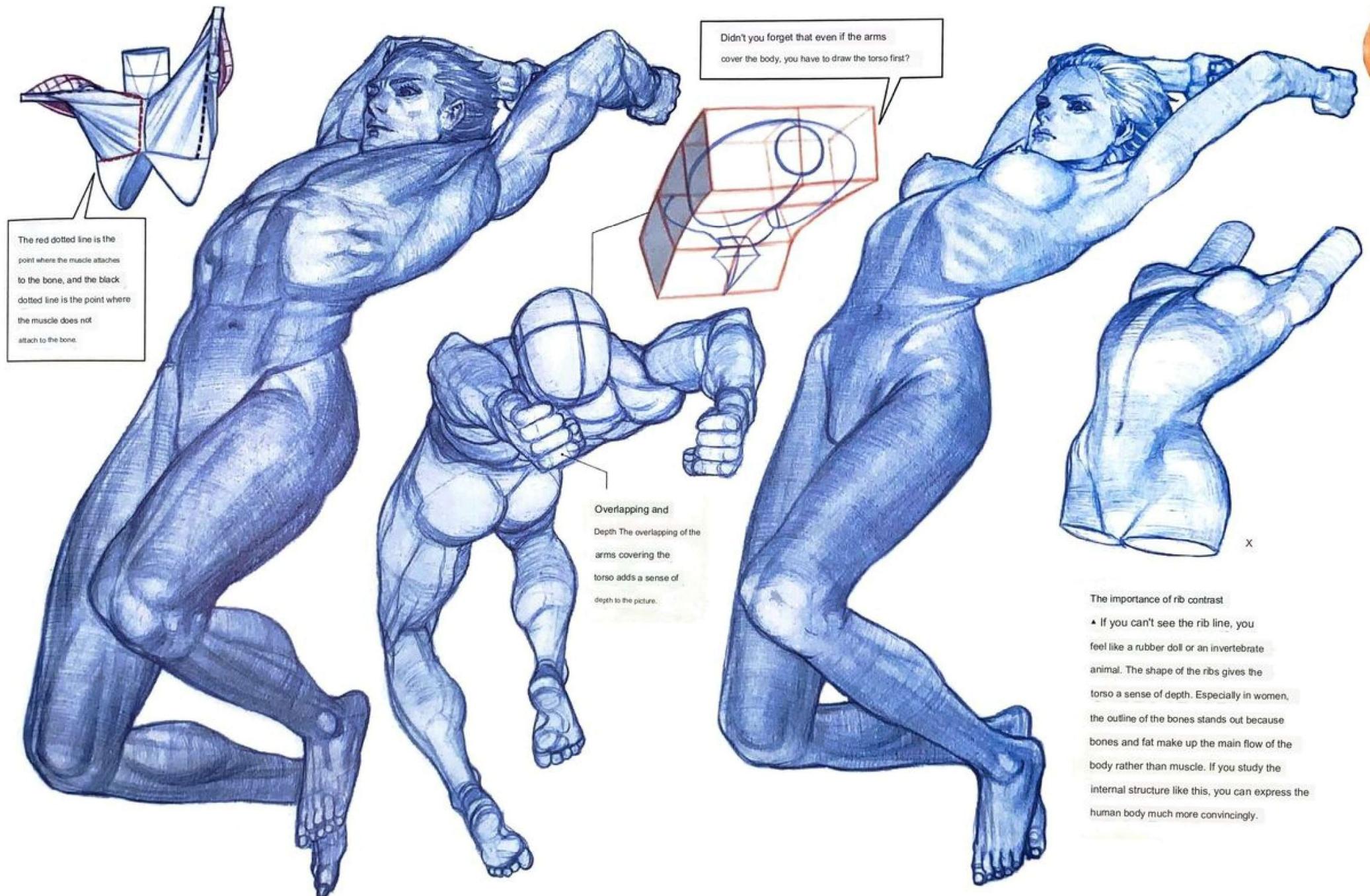
Raise your arms while leaning your torso back, revealing the rib line due to inhalation. Bones do not change in length or volume depending on movement, so if you apply flesh based on the skeleton, you can maintain the proportions of the human body even in difficult postures.



When the collarbone is not moving

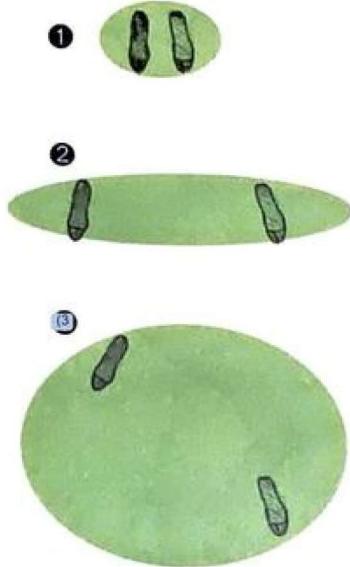
As described above, if the clavicle does not move and only the arm is raised, the distance between the face and the arm does not narrow as shown in Figure A, giving a toy-like feel.





⑤ Attack and defense application posture

■ Basic fighting posture



Foot position in fighting stance

If you look at the basic stance of fighting, the body is turned 45 degrees and facing the front.

When the body is turned 45 degrees, the position of the feet becomes the same

as in number 2. You can stand without losing your balance from impacts from the

front, left, and right sides, so you put your feet in a diagonal direction so you don't fall

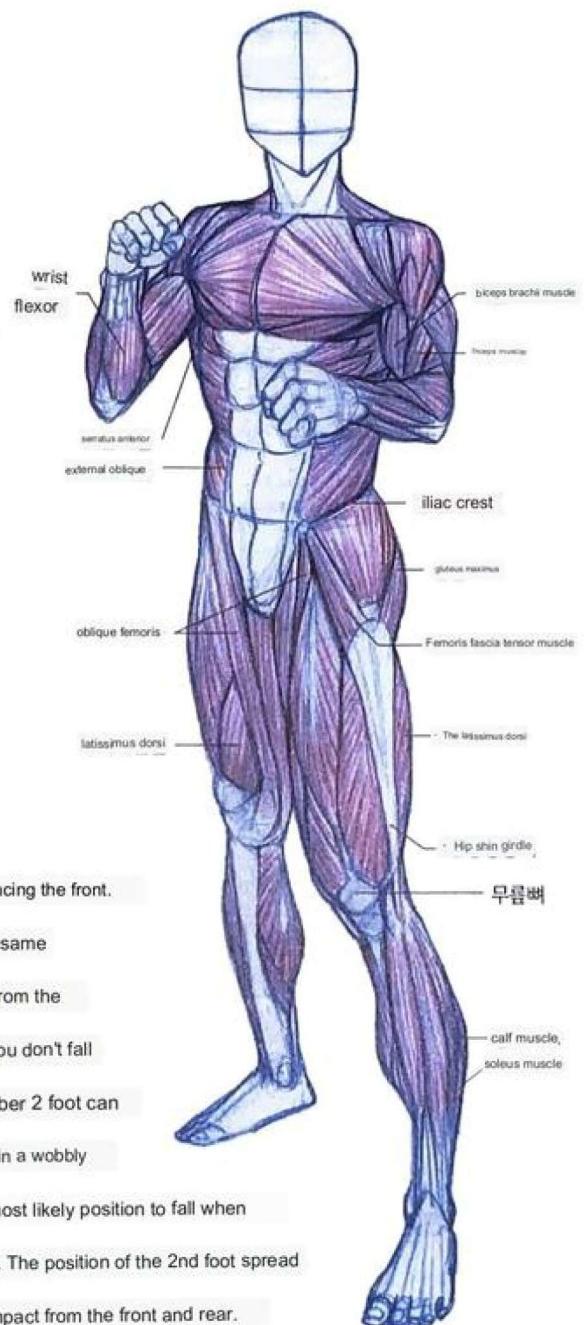
over from the opponent's attack during a fight. The position of the number 2 foot can

be seen not only in fighting stance, but also in everyday life. When balancing in a wobbly

bus or on slippery ice, you spread your feet diagonally. Number 1 is the most likely position to fall when

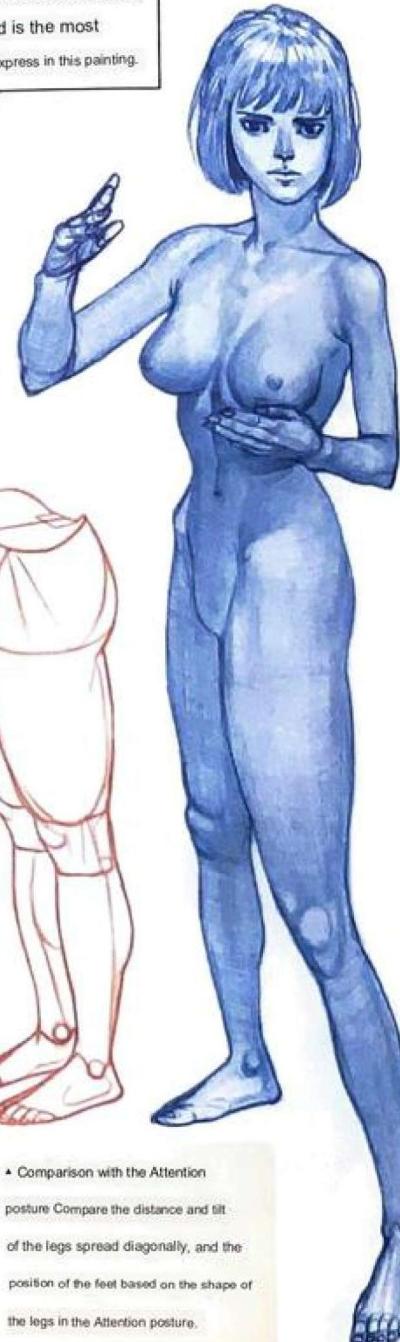
receiving an external impact with the foot position in the standing posture. The position of the 2nd foot spread

left and right is stable for impact from the left and right, but unstable for impact from the front and rear.



The shortened arm extending in the same direction as the body was stretched is the most difficult part to express in this painting.

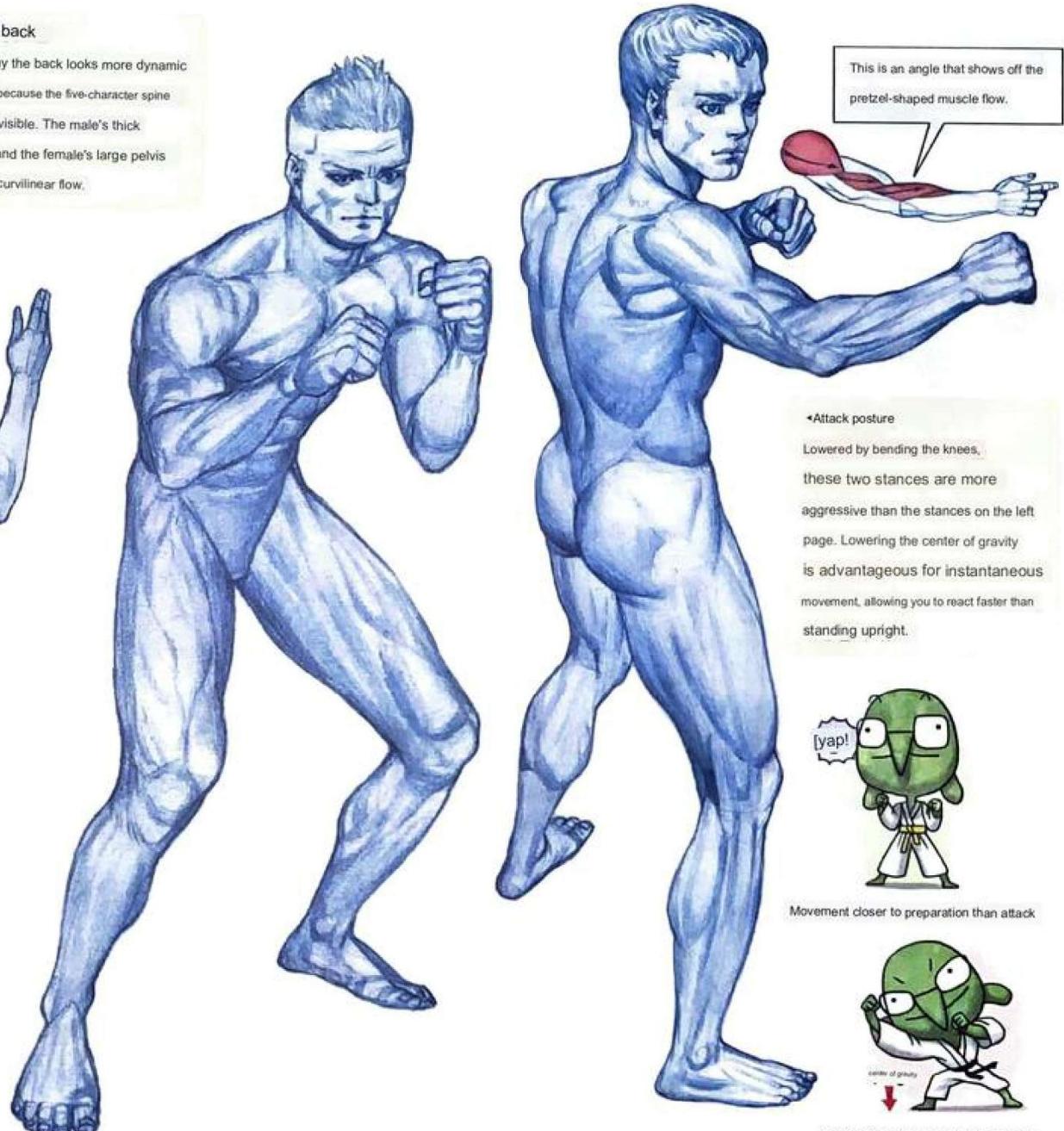
▲ Comparison with the Attention posture Compare the distance and tilt of the legs spread diagonally, and the position of the feet based on the shape of the legs in the Attention posture.





#### ◀ Curved back

The reason why the back looks more dynamic than the front is because the five-character spine flow is directly visible. The male's thick back muscles and the female's large pelvis accentuate the curvilinear flow.



This is an angle that shows off the pretzel-shaped muscle flow.

#### ◀ Attack posture

Lowered by bending the knees, these two stances are more aggressive than the stances on the left page. Lowering the center of gravity is advantageous for instantaneous movement, allowing you to react faster than standing upright.

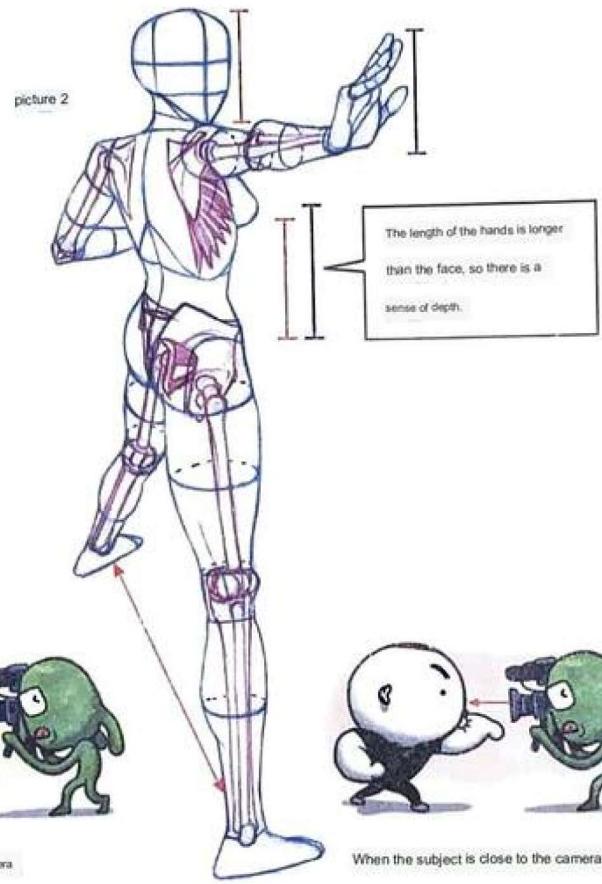
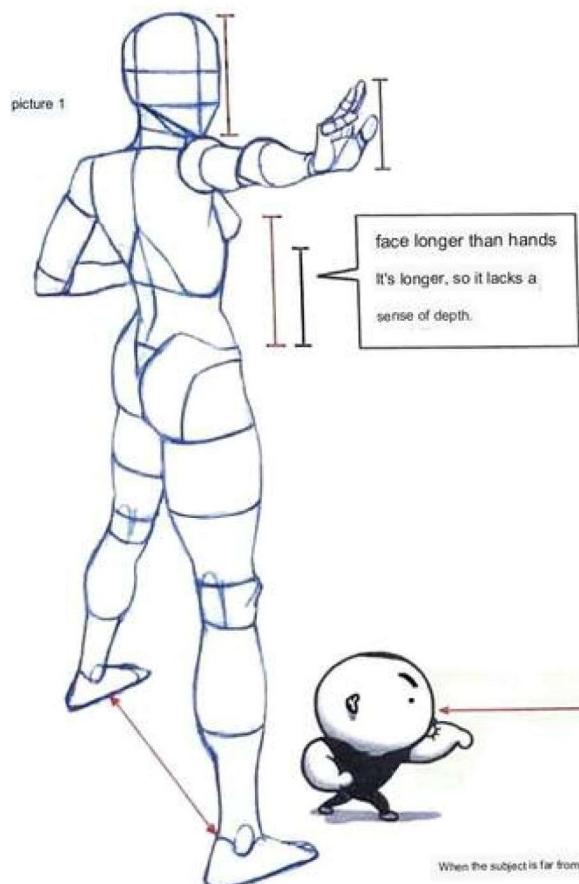


Movement closer to preparation than attack



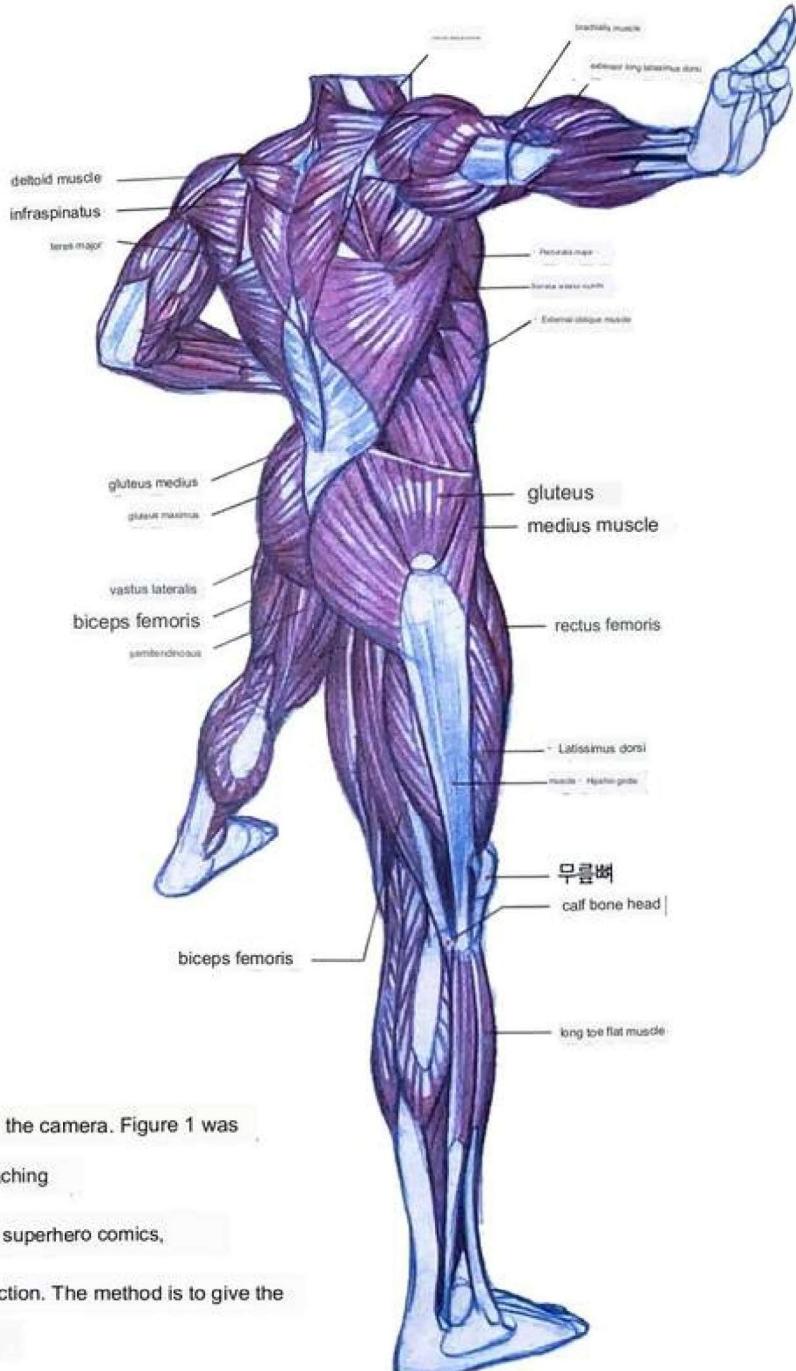
Aggressive attack posture with low body

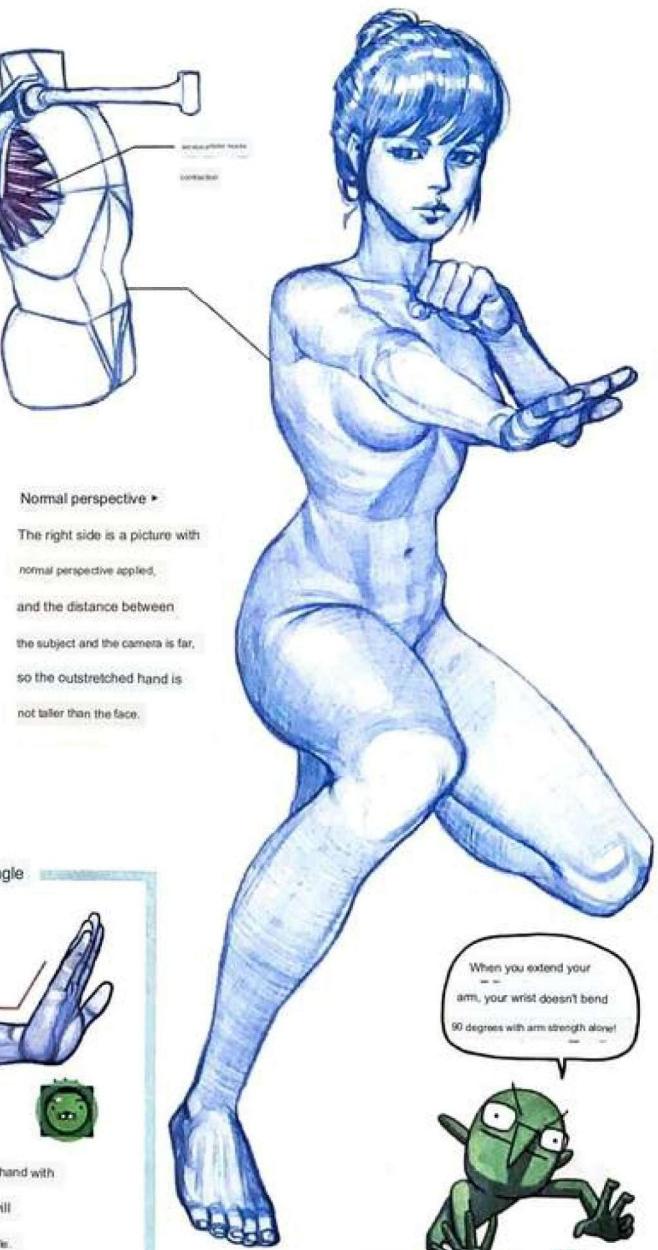
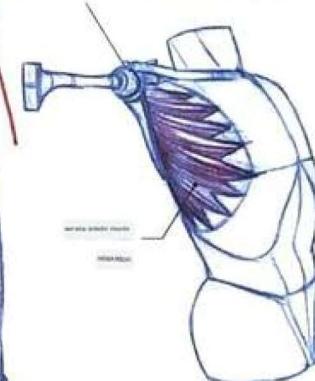
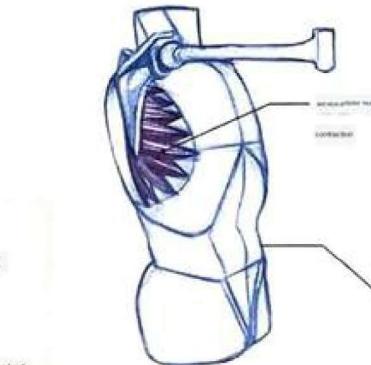
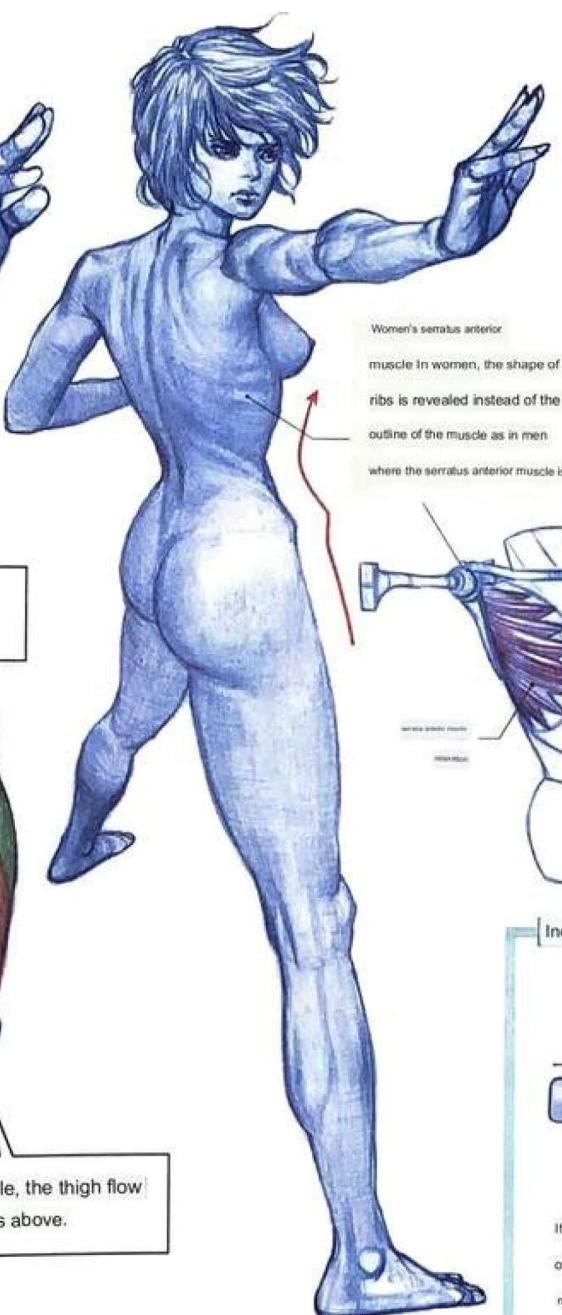
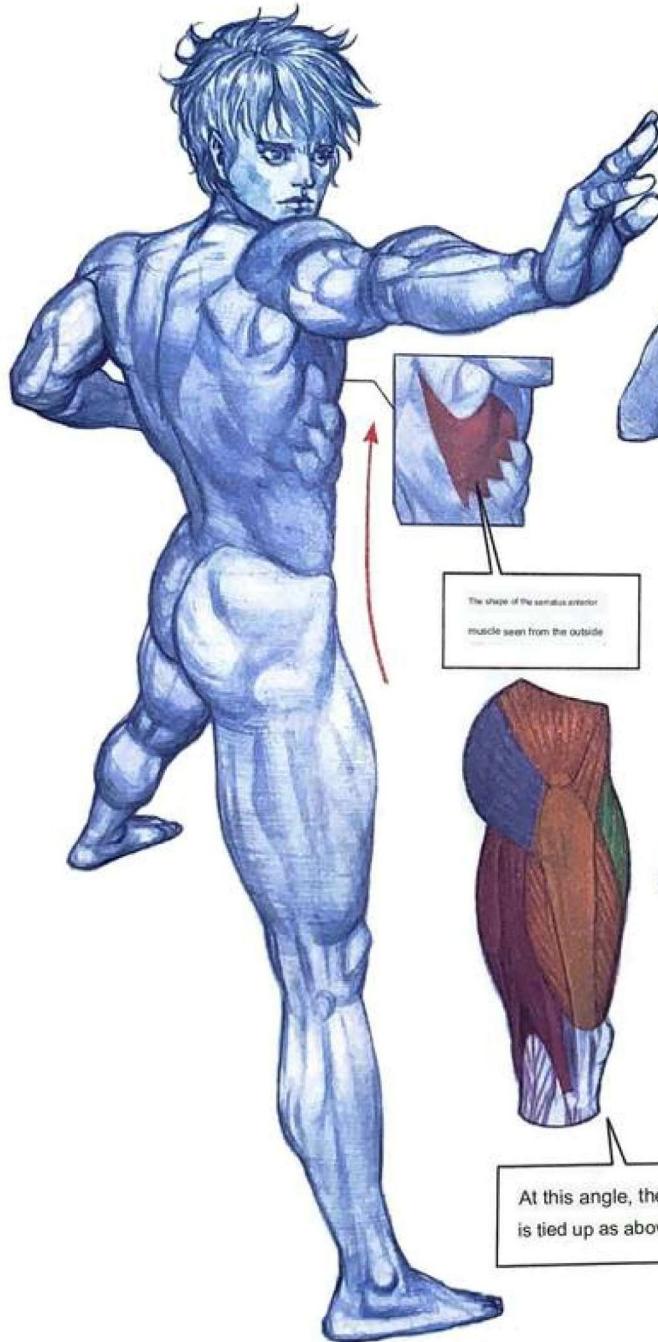
■ Basic fighting posture with one hand out



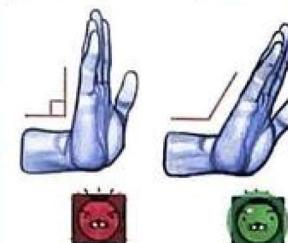
The difference in the image caused by the distance between the camera and the subject

There are two ways of shortening. There is a way to zoom in the camera lens to shoot the subject, and a way to shoot the subject directly with the camera. Figure 1 was taken through zoom-in, and this method is used when you want to express a general image rather than a sense of depth. Figure 2 is taken by approaching the subject directly, and is used when the three-dimensional effect of the subject is clearly displayed to maximize realism and presence. In American superhero comics, the camera directly approaches and depicts objects from the point of view in order to create a sense of urgency or dynamic situations in the action. The method is to give the size difference between the object near the screen and the object behind it. As shown in Figure 2, when you reach out your hand toward the screen, the forward hand is expressed larger than the face behind it, giving the impression that the situation on the screen is happening close to the screen.





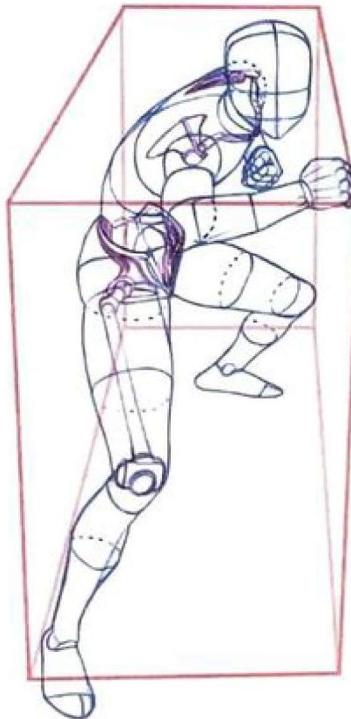
## Incorrect note Hand angle



If you bend the back of your hand with only your arm strength, it will not bend vertically, but at an angle.

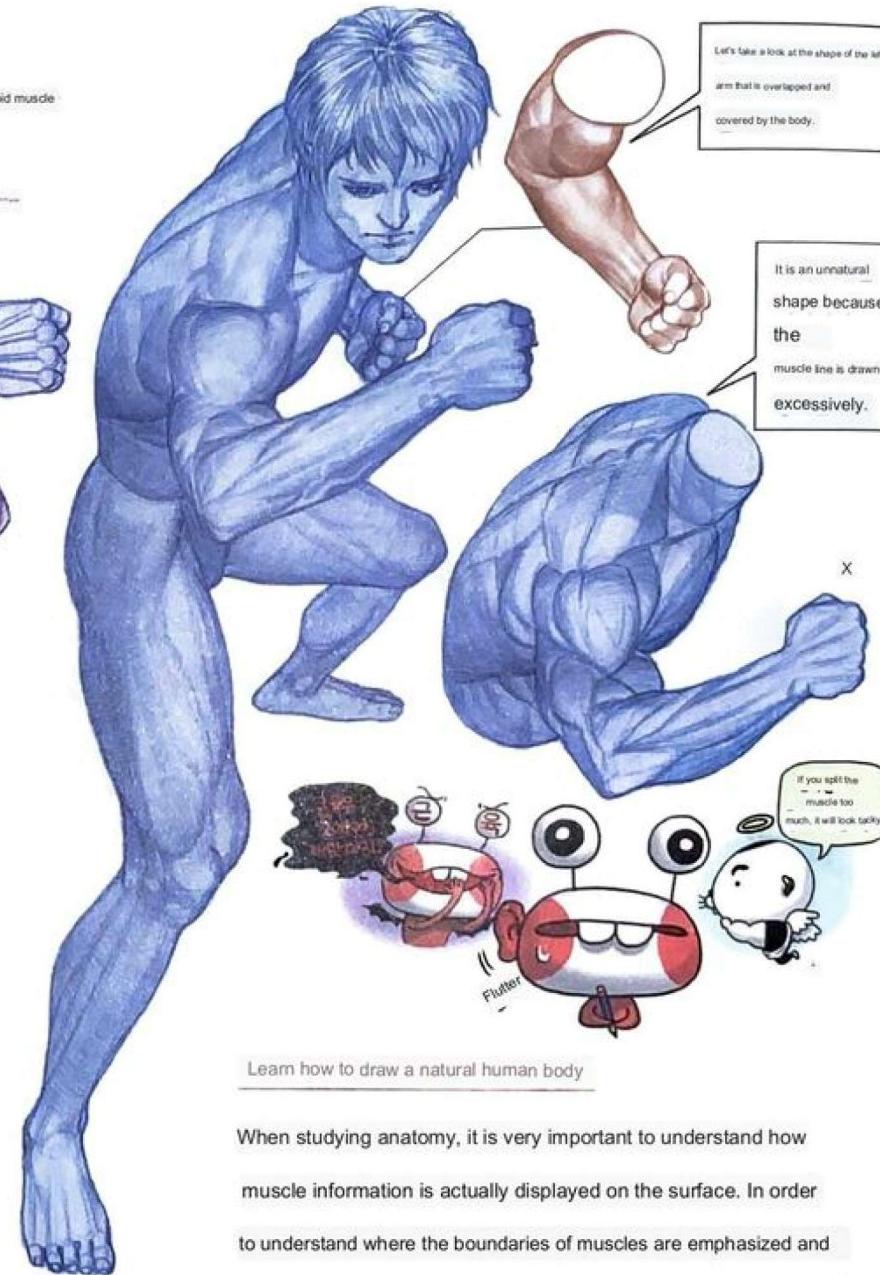
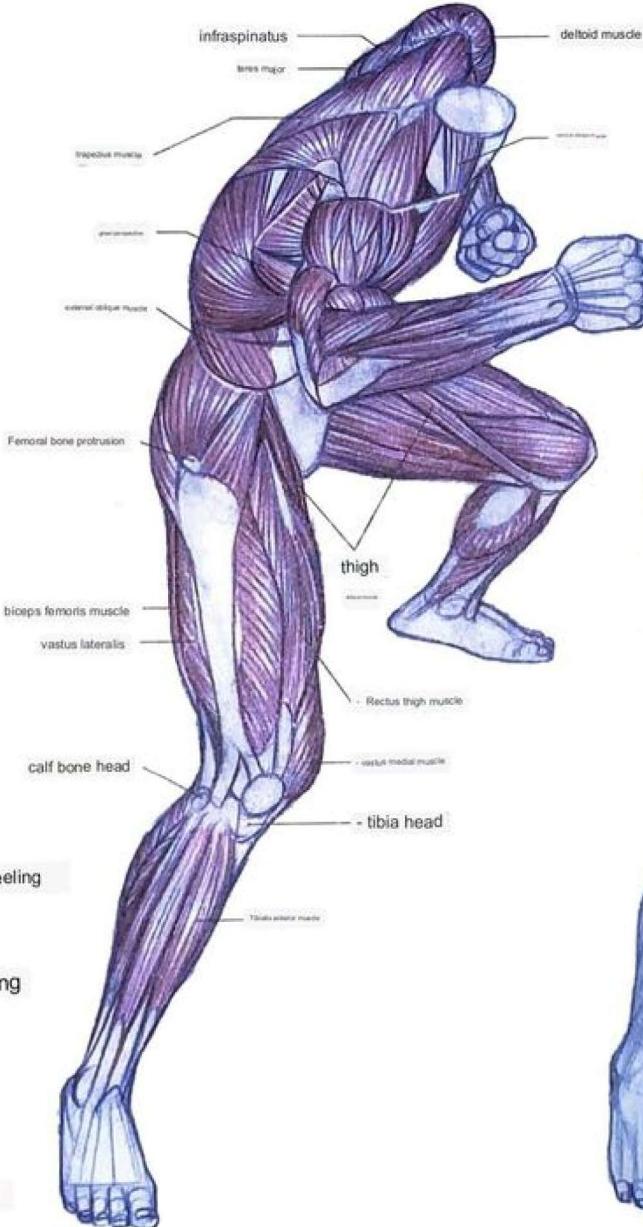


■ Fighting readiness seen from a high angle



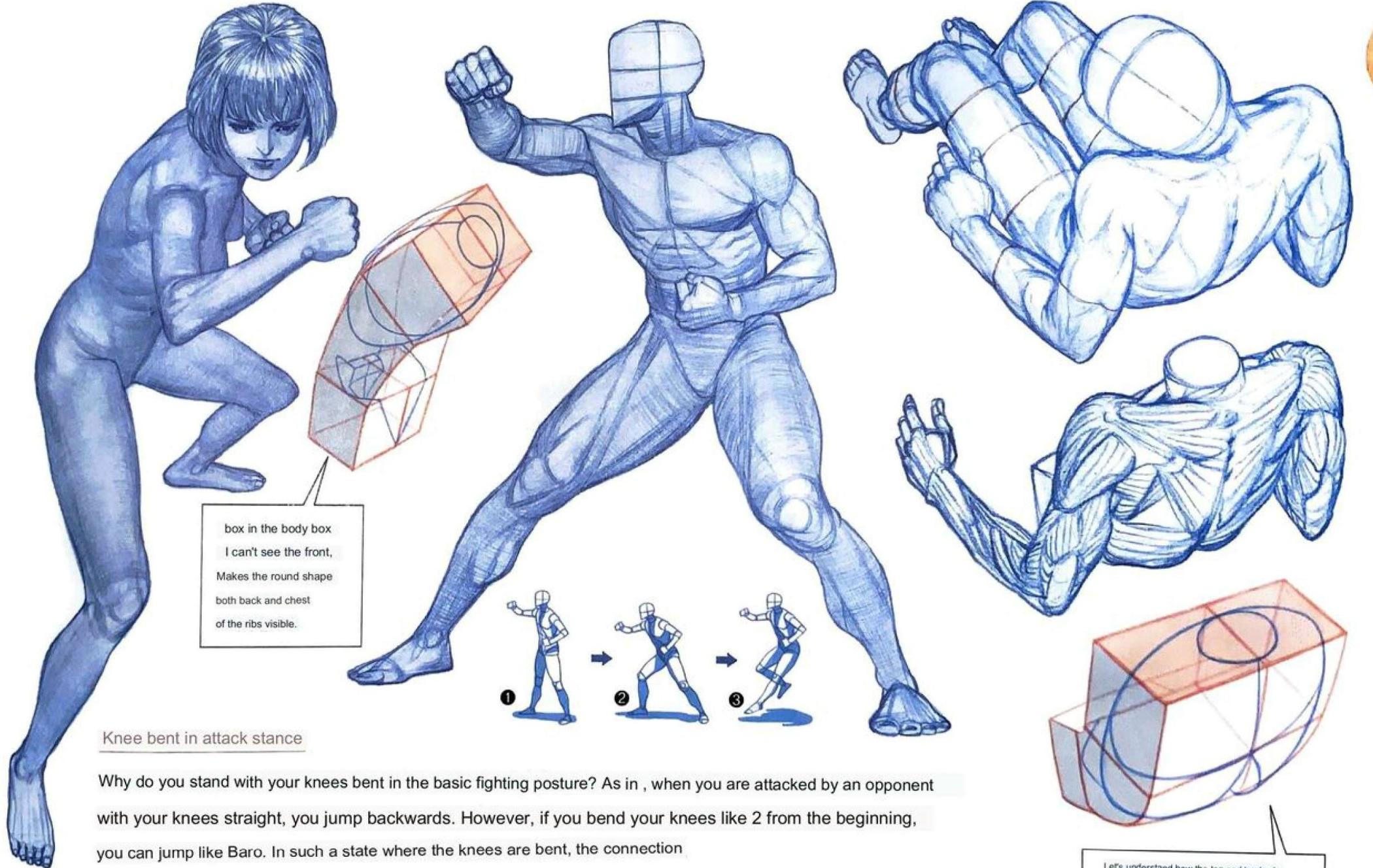
Drawing high-angle action poses

High-angle 3-point perspective gives a more colorful and dynamic feeling than usual, and is often used in action scenes as it is suitable for emphasizing objects in front of the screen and creating dynamic scenes. Analyzing the poses on this page, starting with the upper body, the forward arms are in a position to defend the face, and the backward arms are in a preparation posture for a punch attack. In the lower body, it bends both knees and spreads its feet wide in a diagonal direction to take an offensive and defensive stance that allows it to move quickly forward, backward, left and right.



Learn how to draw a natural human body

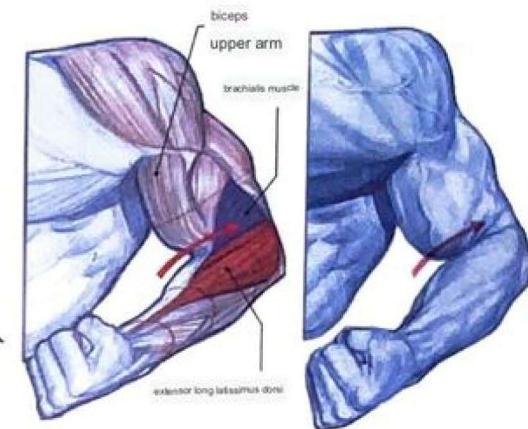
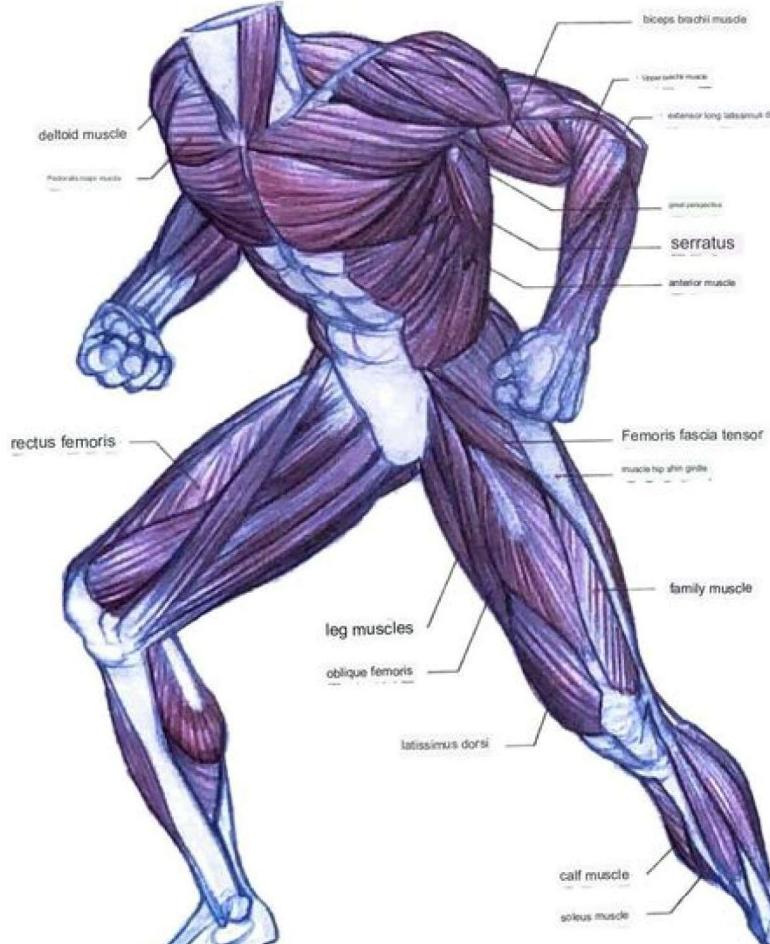
When studying anatomy, it is very important to understand how muscle information is actually displayed on the surface. In order to understand where the boundaries of muscles are emphasized and where the flow is tied, it is necessary to compare and analyze nude photos of various body types and practice drawing repeatedly.



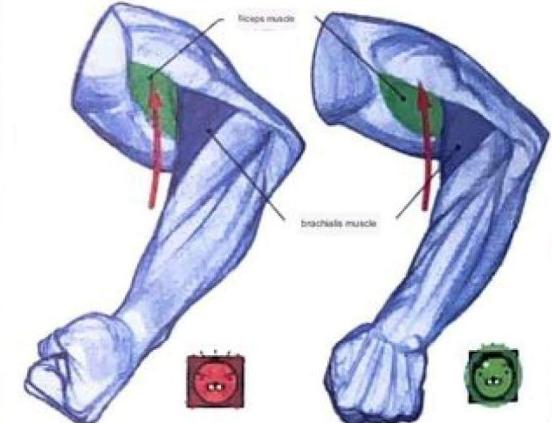
## ■ Threatening posture

About the direction of wrinkles on the arm

The direction of the wrinkles formed when the arm is folded depends on three circumstances. The first is the direction of the hand, the second is whether or not you are giving strength to the arm, and the third is the amount of muscle in the arm. This time, let's look at the direction of the wrinkles according to the direction of the hand with the strength applied to the arm.



Oh, the direction of the wrinkles

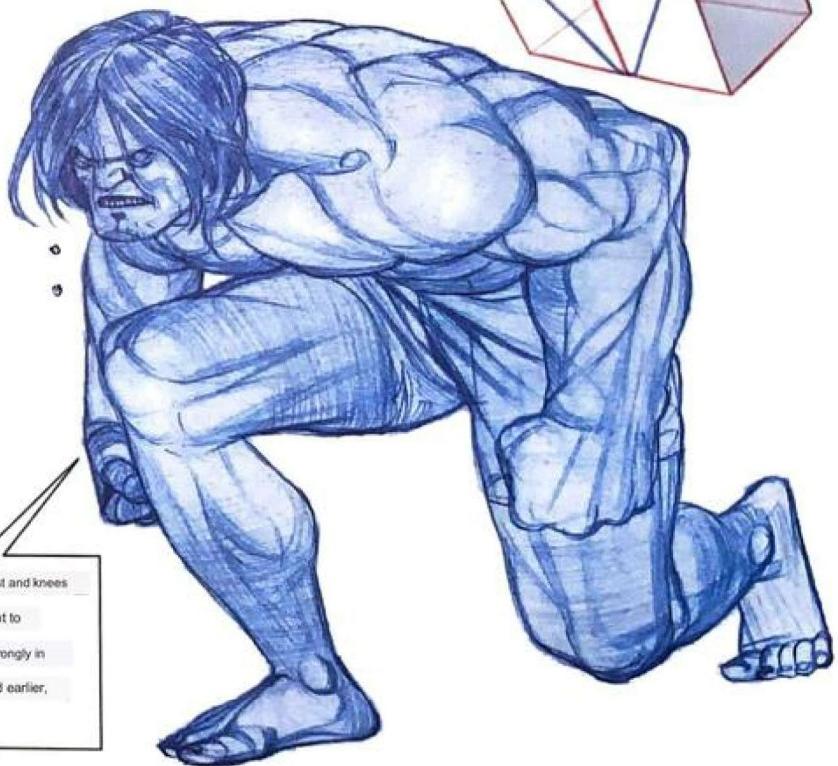
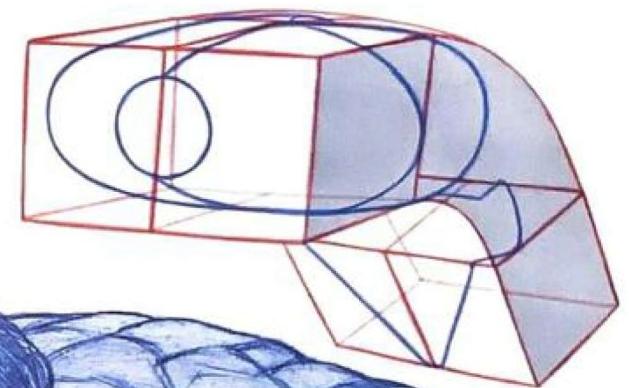


When the palm faces the biceps brachii muscle, do not draw a crease along the border between the brachialis brachii muscle and the biceps brachii muscle.

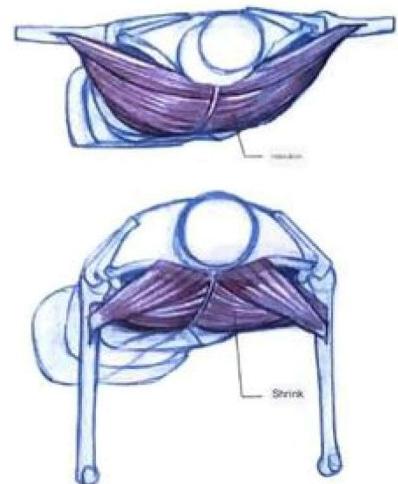
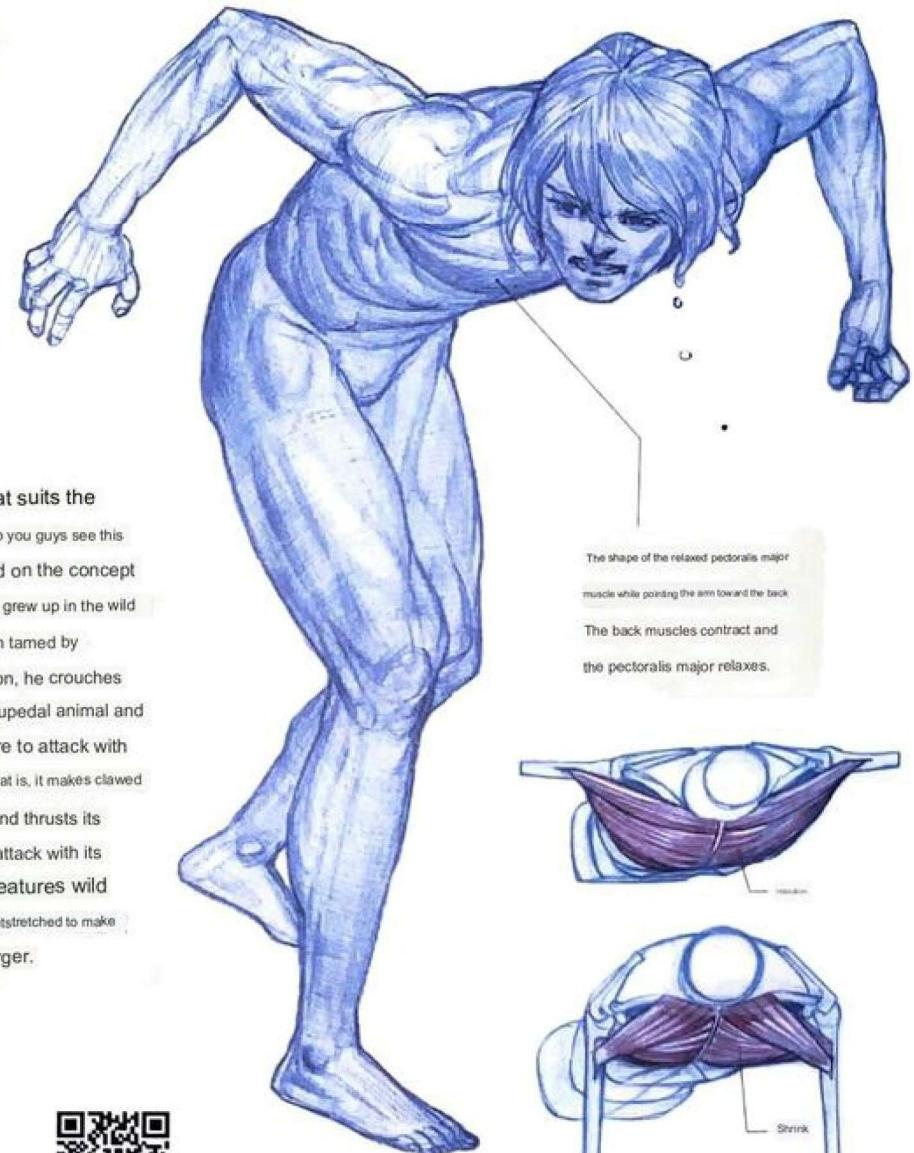
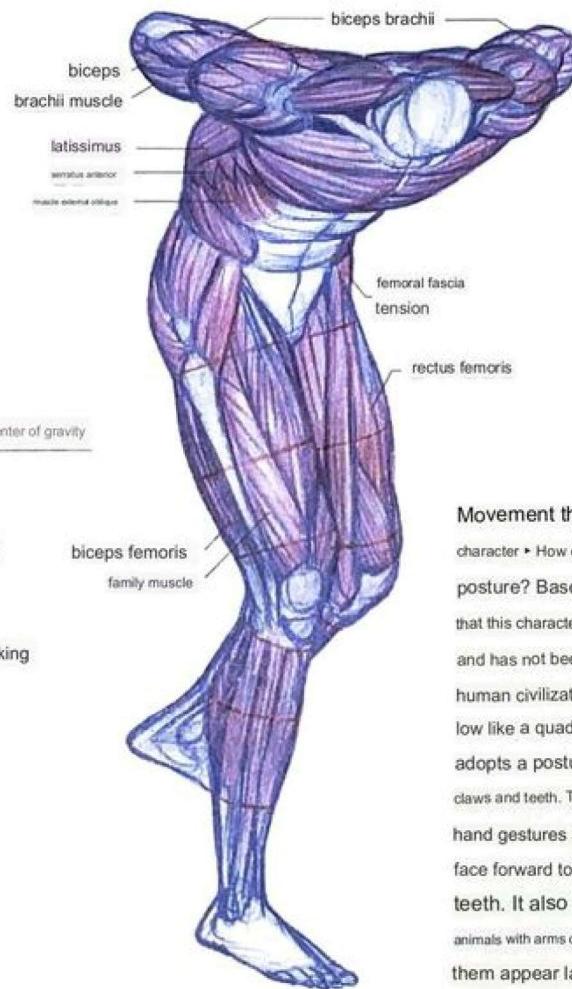
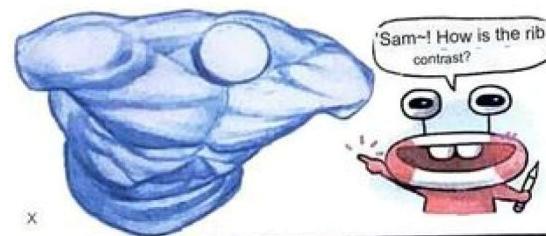
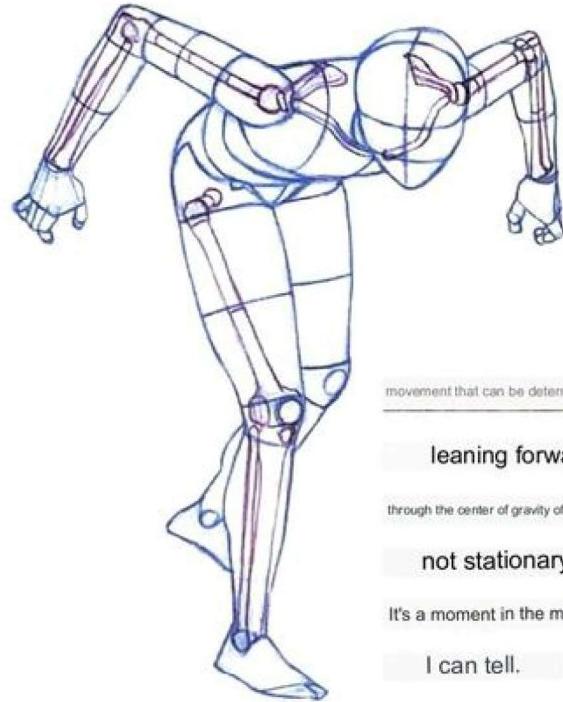
To create wrinkles at the boundary between the brachialis brachii muscle and the biceps brachii muscle, it is possible when a muscular man bends his arm with force while pointing the thumb towards the biceps brachii muscle.

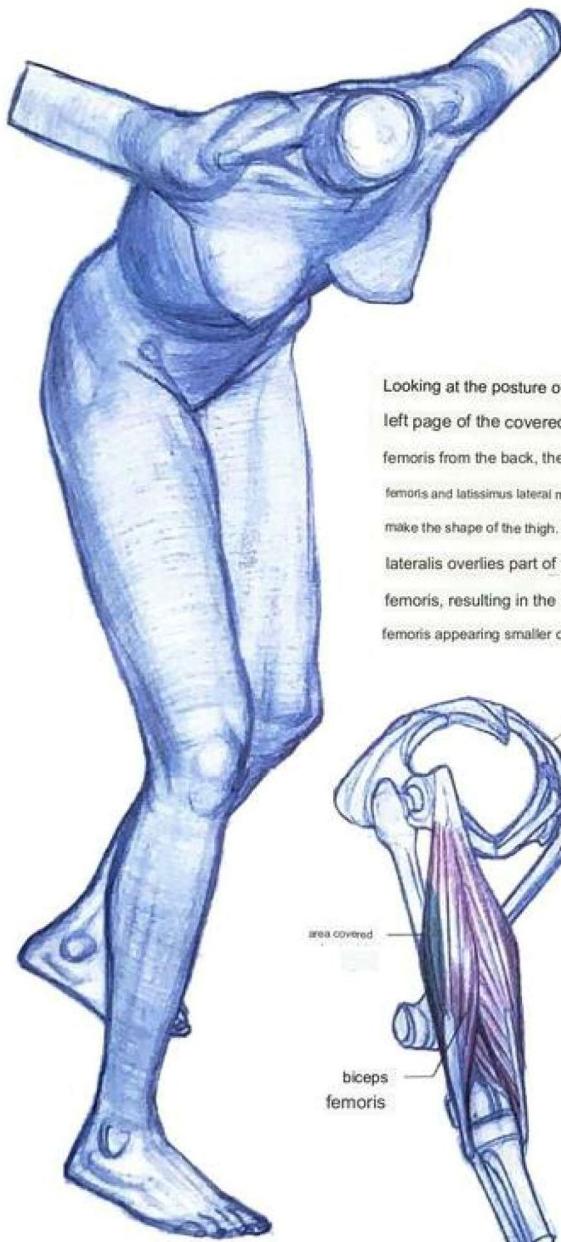


In the meantime, I've been drawing the direction of wrinkles habitually... From now on, properly!

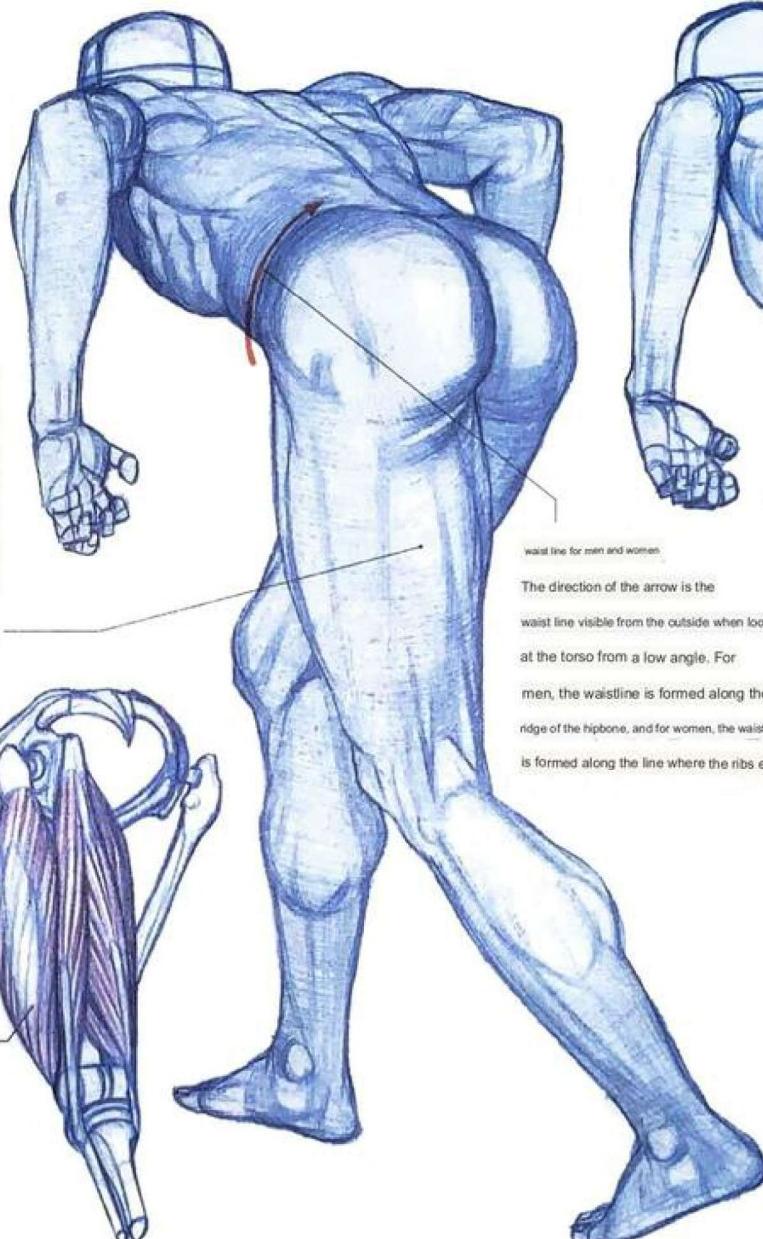


## ■ Animal-like threat posture

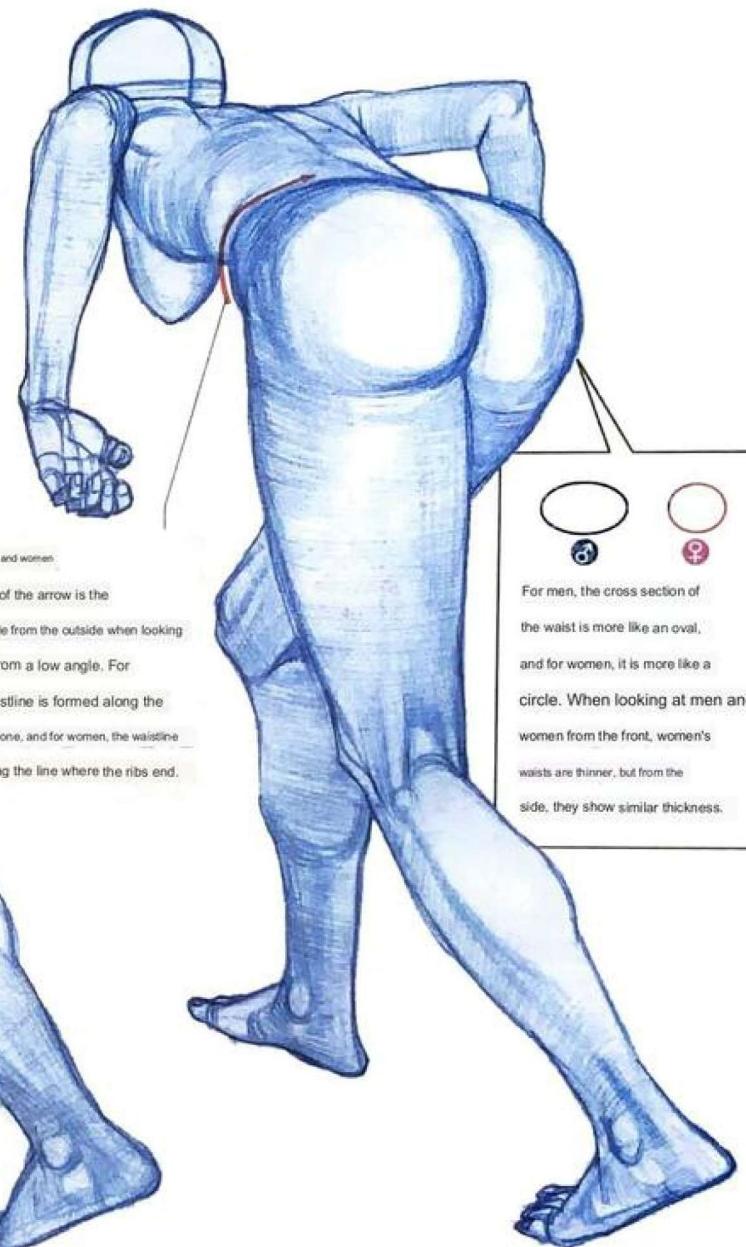




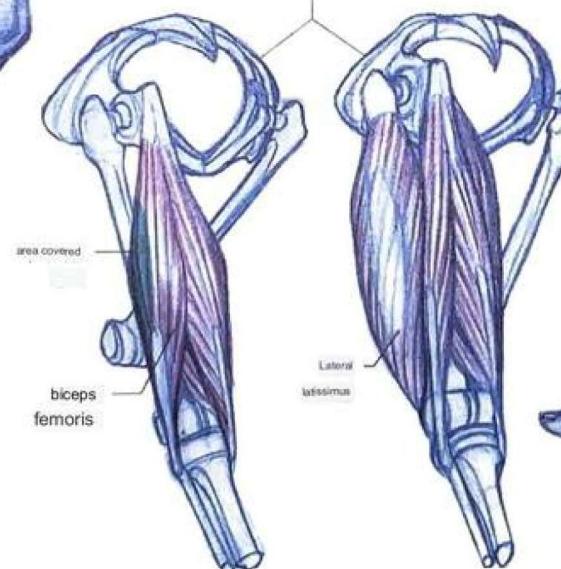
Looking at the posture of the left page of the covered biceps femoris from the back, the biceps femoris and latissimus lateral muscle make the shape of the thigh. The vastus lateralis overlies part of the biceps femoris, resulting in the biceps femoris appearing smaller outwardly.



waist line for men and women  
The direction of the arrow is the waist line visible from the outside when looking at the torso from a low angle. For men, the waistline is formed along the ridge of the hipbone, and for women, the waistline is formed along the line where the ribs end.

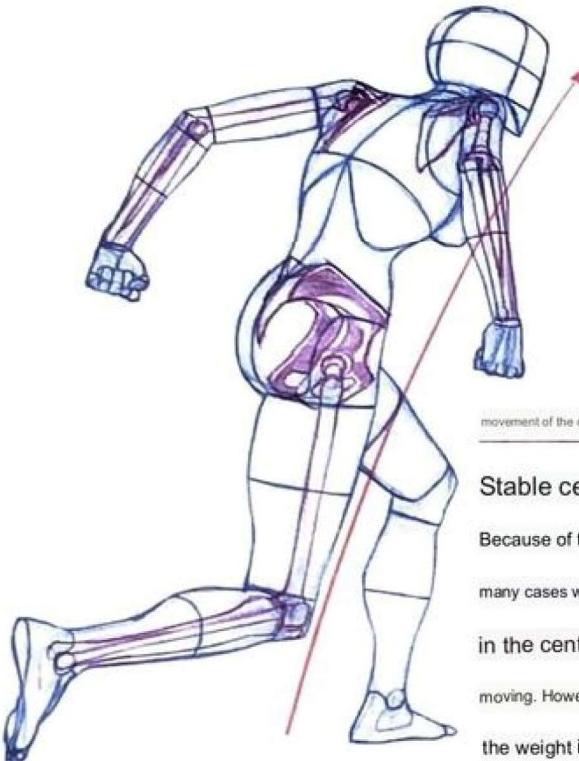


For men, the cross section of the waist is more like an oval, and for women, it is more like a circle. When looking at men and women from the front, women's waists are thinner, but from the side, they show similar thickness.



area covered  
biceps femoris  
Lateral latissimus

■ Stance of moving forward to attack

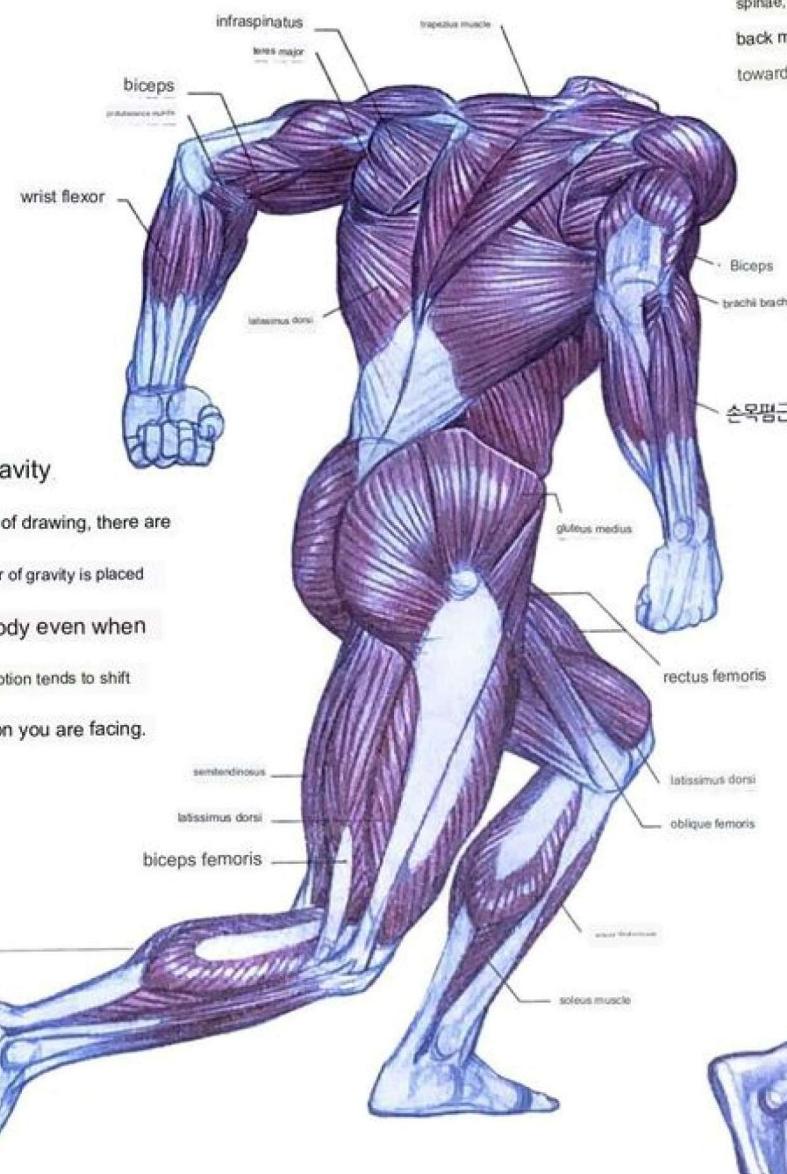


Stable center of gravity

Because of the fixed idea of drawing, there are many cases where the center of gravity is placed in the center of the body even when moving. However, moving motion tends to shift the weight in the direction you are facing. should be drawn.

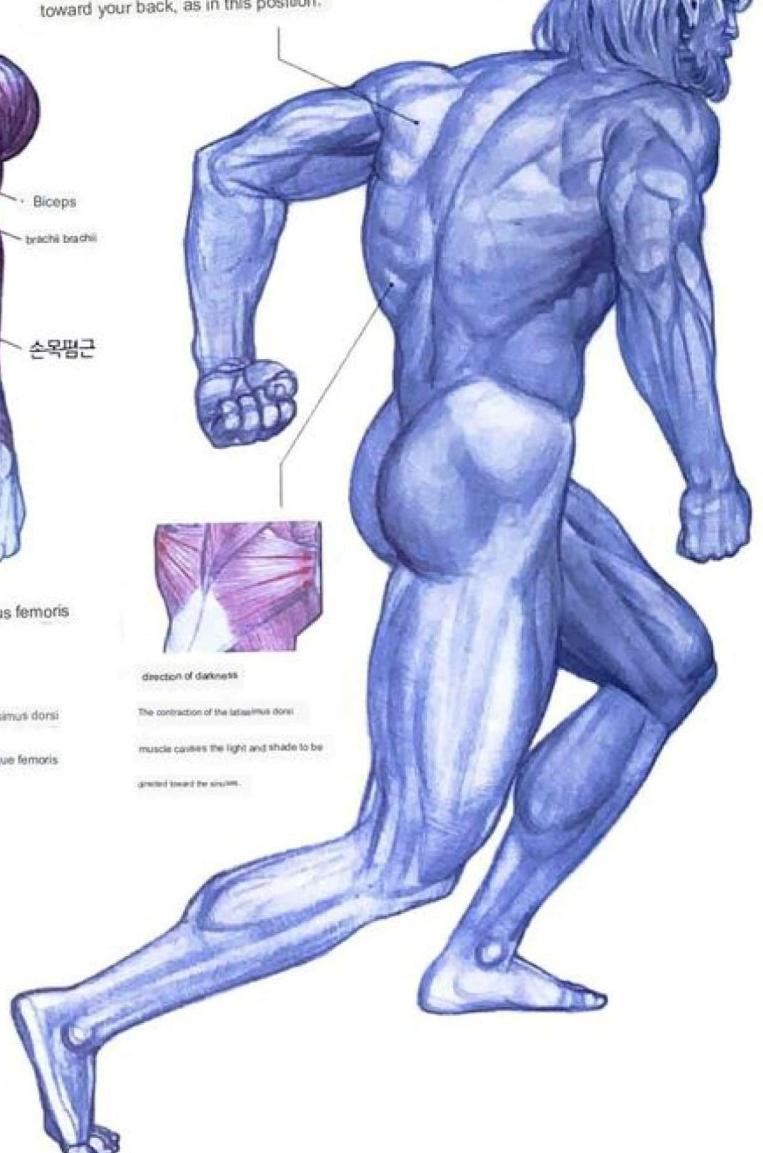
Difference Between Tendon and Tendon

The sinew creates a curved flow, and the sinew creates a straight flow. If the muscle is expressed in a straight line, it feels like a hard sculpture rather than soft skin, and if the tendon is treated in a curved way, the skeleton looks bent or the flesh feels soft. As muscles develop, the sense of volume of the tendon increases noticeably, but the thickness of the tendon does not become as thick as that of the muscle. The wrists and ankles are thinner than other parts because they are only made up of tendons.



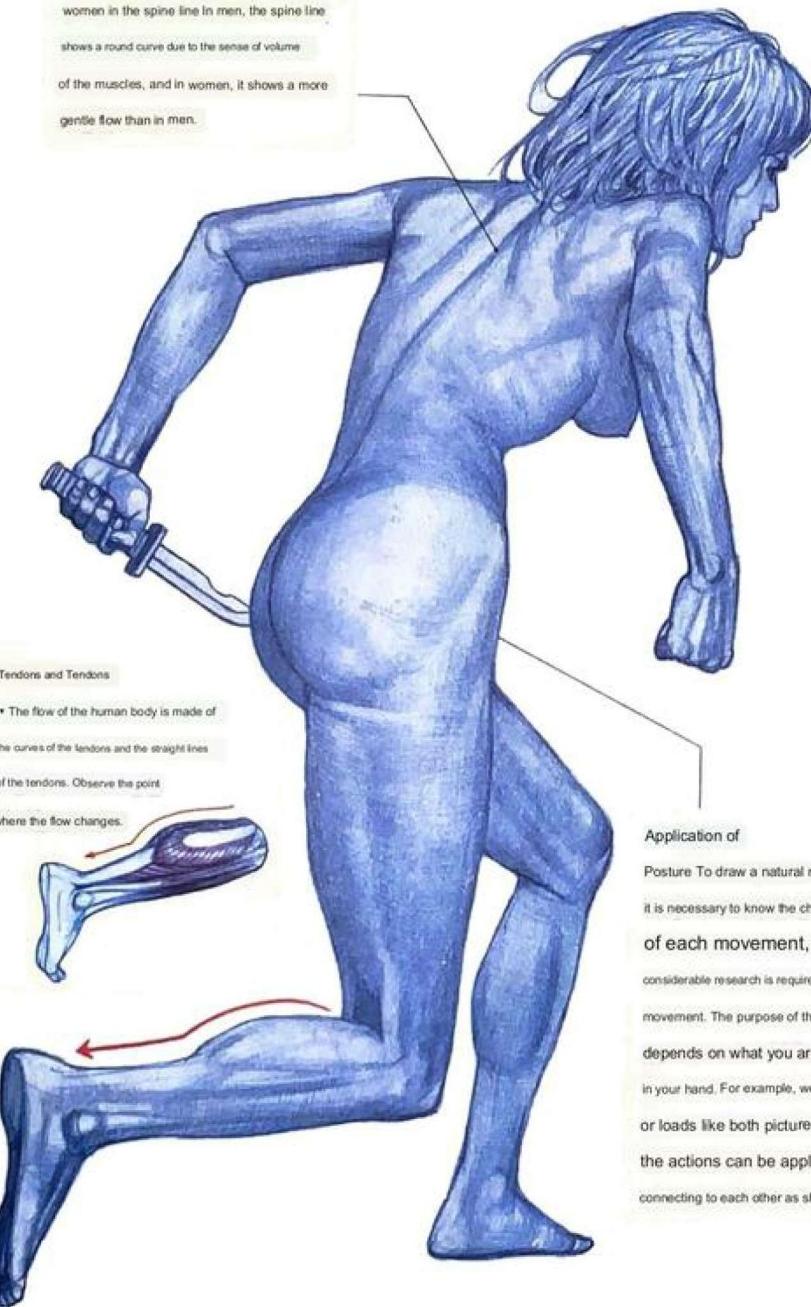
Back muscles that respond to shoulder movement

All of the visible back muscles, except for the erector spinae, are used to move the shoulder. All of your back muscles must contract in order to point your arms toward your back, as in this position.



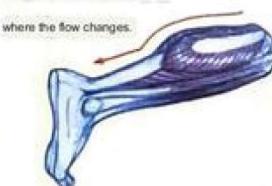
## Differences between men and women

women in the spine line In men, the spine line shows a round curve due to the sense of volume of the muscles, and in women, it shows a more gentle flow than in men.



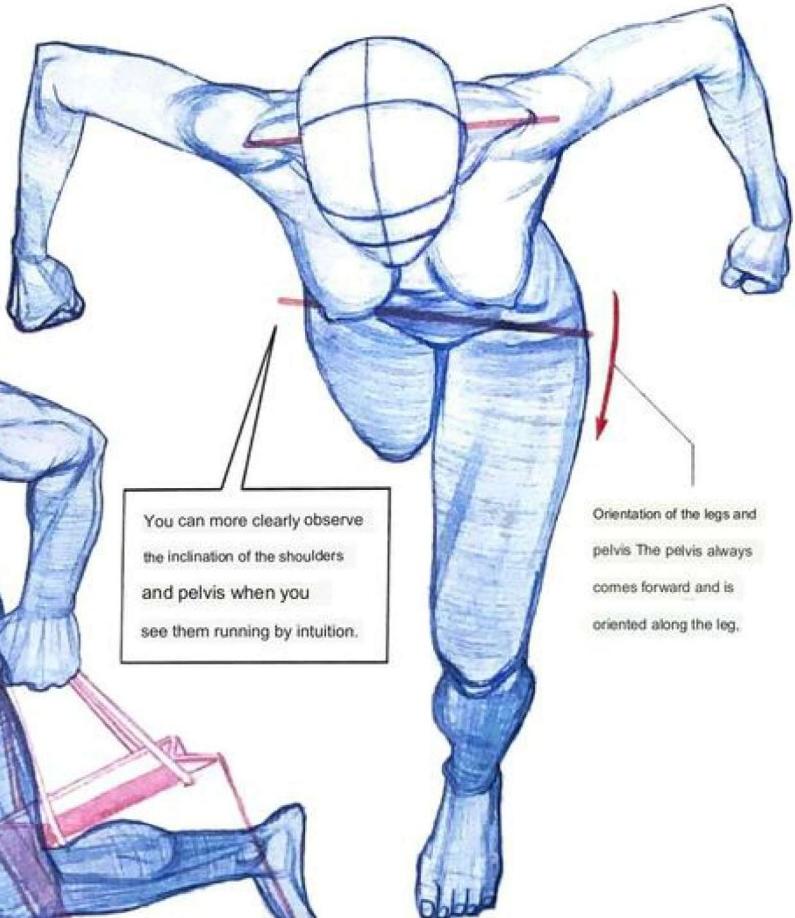
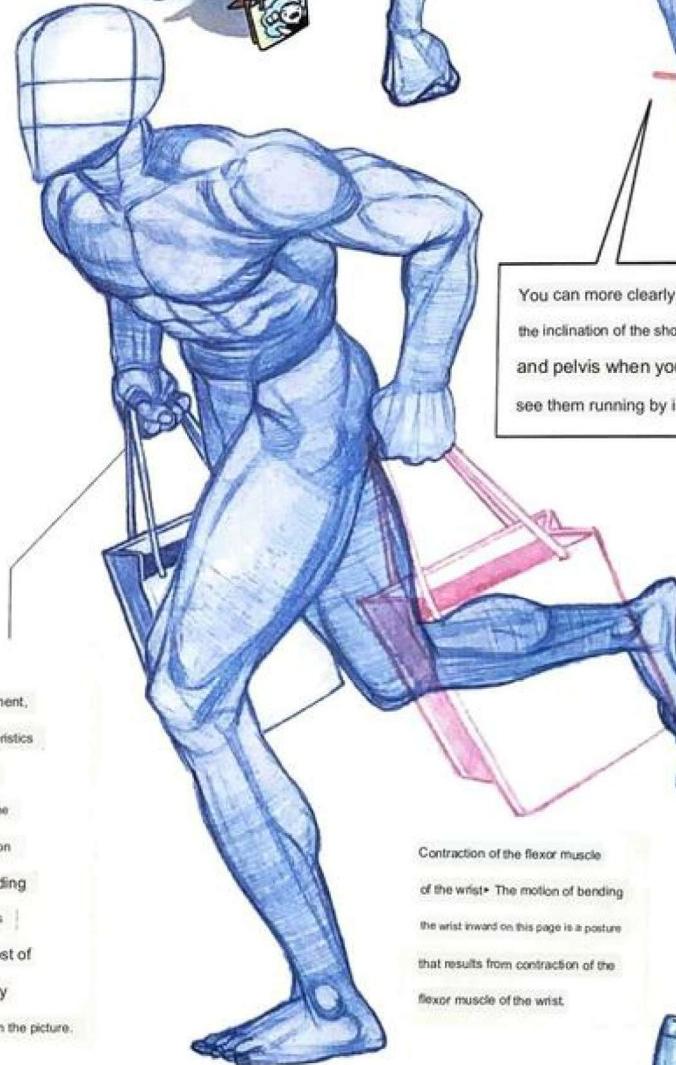
## Tendons and Tendons

\* The flow of the human body is made of the curves of the tendons and the straight lines of the tendons. Observe the point where the flow changes.



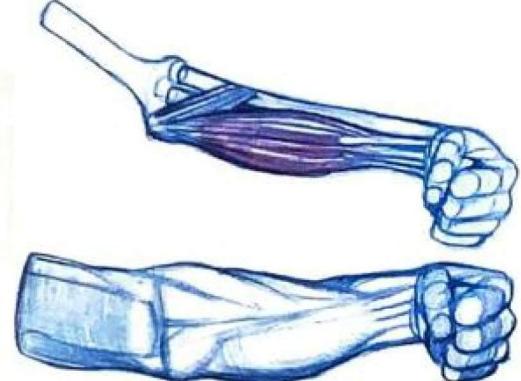
## Application of

**Posture To draw a natural movement,** it is necessary to know the characteristics of each movement, so considerable research is required on the movement. The purpose of this action depends on what you are holding in your hand. For example, weapons or loads like both pictures. Most of the actions can be applied by connecting to each other as shown in the picture.

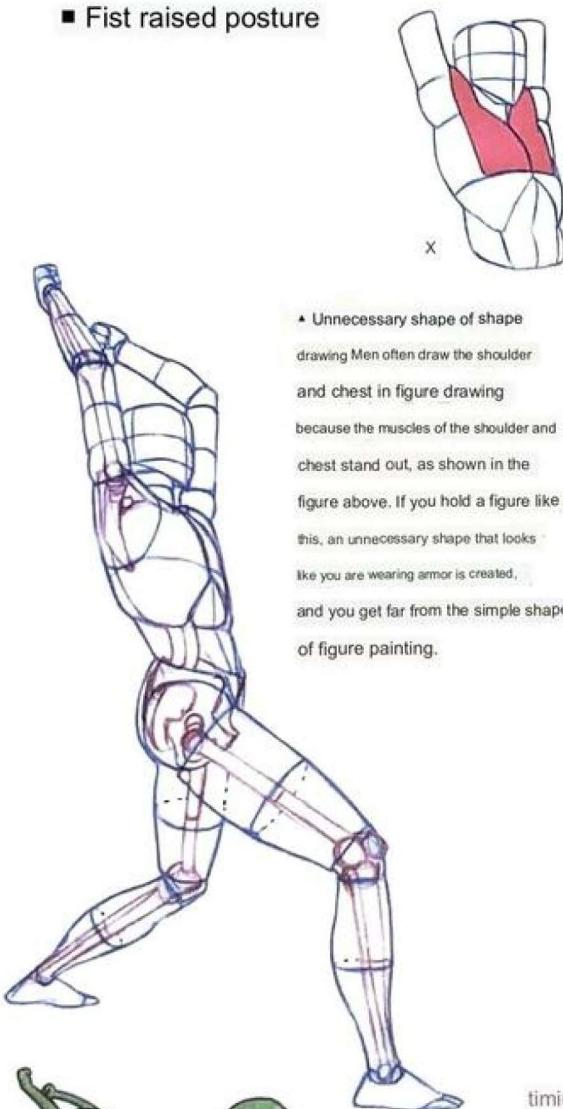


Orientation of the legs and pelvis. The pelvis always comes forward and is oriented along the leg.

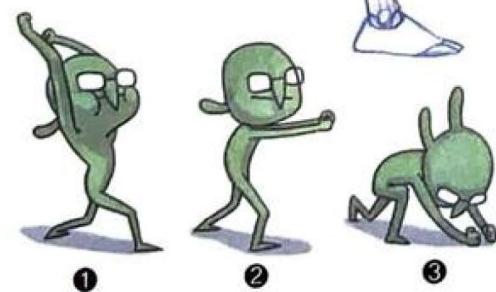
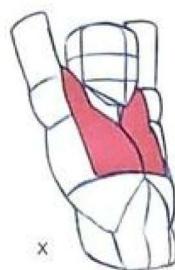
**Contraction of the flexor muscle of the wrist** \* The motion of bending the wrist inward on this page is a posture that results from contraction of the flexor muscle of the wrist.



## ■ Fist raised posture

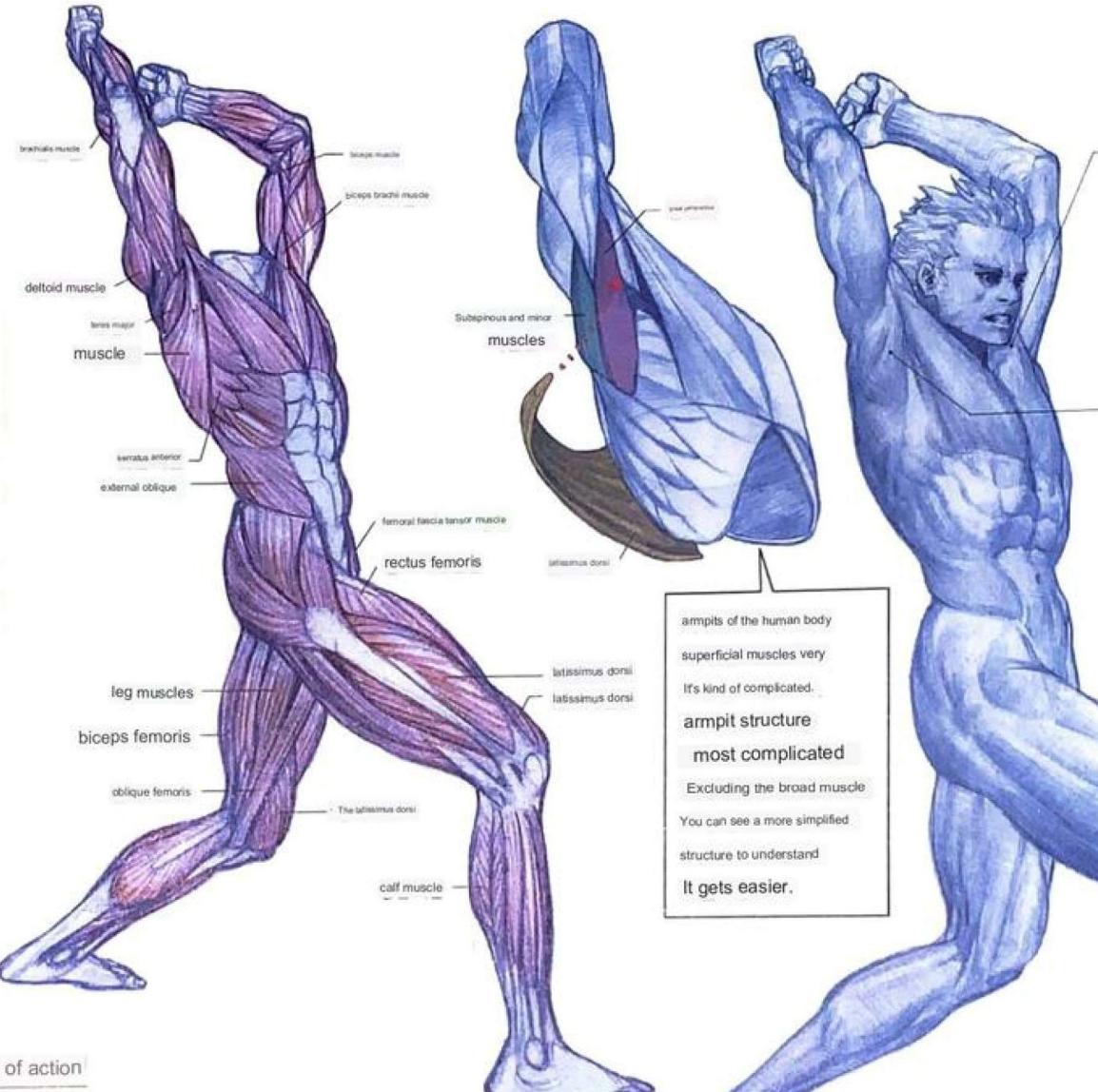


▲ Unnecessary shape of shape  
drawing Men often draw the shoulder and chest in figure drawing because the muscles of the shoulder and chest stand out, as shown in the figure above. If you hold a figure like this, an unnecessary shape that looks like you are wearing armor is created, and you get far from the simple shape of figure painting.



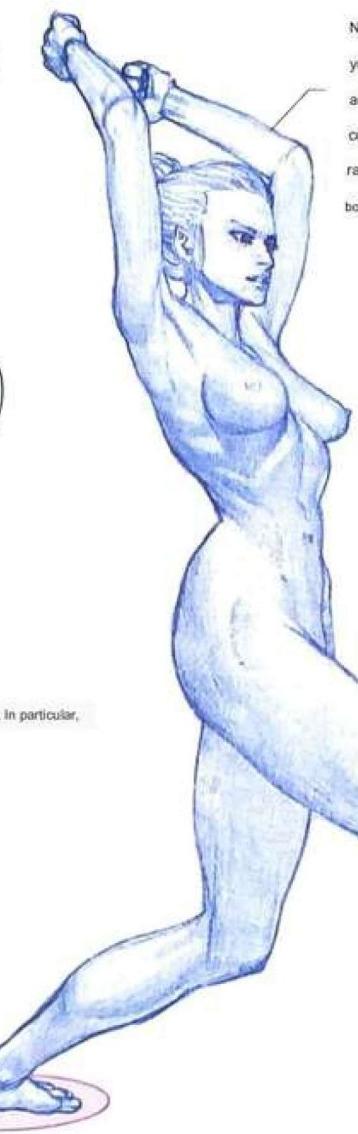
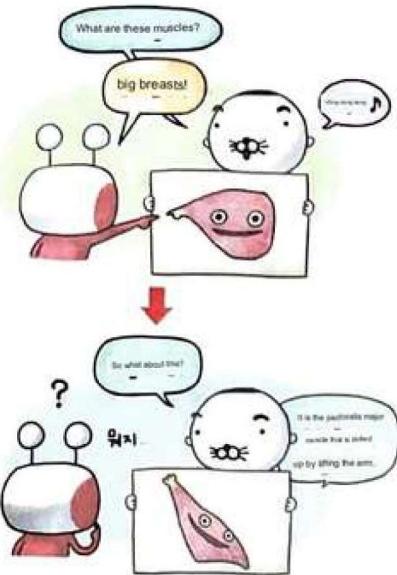
### timing of action

How many impactful postures do you have among these connecting movements? Number 2, which gathers the maximum power and number 2, which is the pinnacle of hitting, feels the most dynamic. Since number 2, which is in the middle of the movement, is less dynamic, you need to use a close-up or speed line effect to create an impact.



Pectoralis major muscle thickness  
When a man raises his arm, his neck is buried due to the thickness of the pectoralis major muscle.  
will be covered.

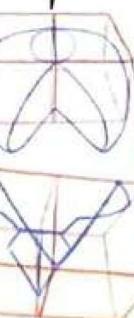
Why is the armpit structure complicated?  
The armpit area is anatomically Why is it so complicated? In the' days of apes climbing trees, in order to hang on trees for a long time with their arms, the subspinous muscles, teres major muscles, and latissimus dorsi muscles attached to the armpit were mainly used, and these muscles played a role in strongly supporting the connection between the arms and the body. The structure has to be strong enough to support the weight of the body while the range of motion is wide, so these characteristics remain even today, when they do not climb trees.



Natural Arm Angle Raising  
your bent arms up creates  
an inclination where the hands  
converge inside the body,  
rather than an angle of 11 for  
both arms.



Suitable for the  
low angle, the  
lower part of the  
torso box is  
also visible.



Large flow of latissimus  
dorsi if you look up at your torso  
from below the front, you can  
observe the appearance of  
the latissimus dorsi surrounding  
the torso.

### Various shapes of big breasts

You need to study the shape of the muscles that change depending

on the movement so that you can express the flow that suits your posture. In particular,

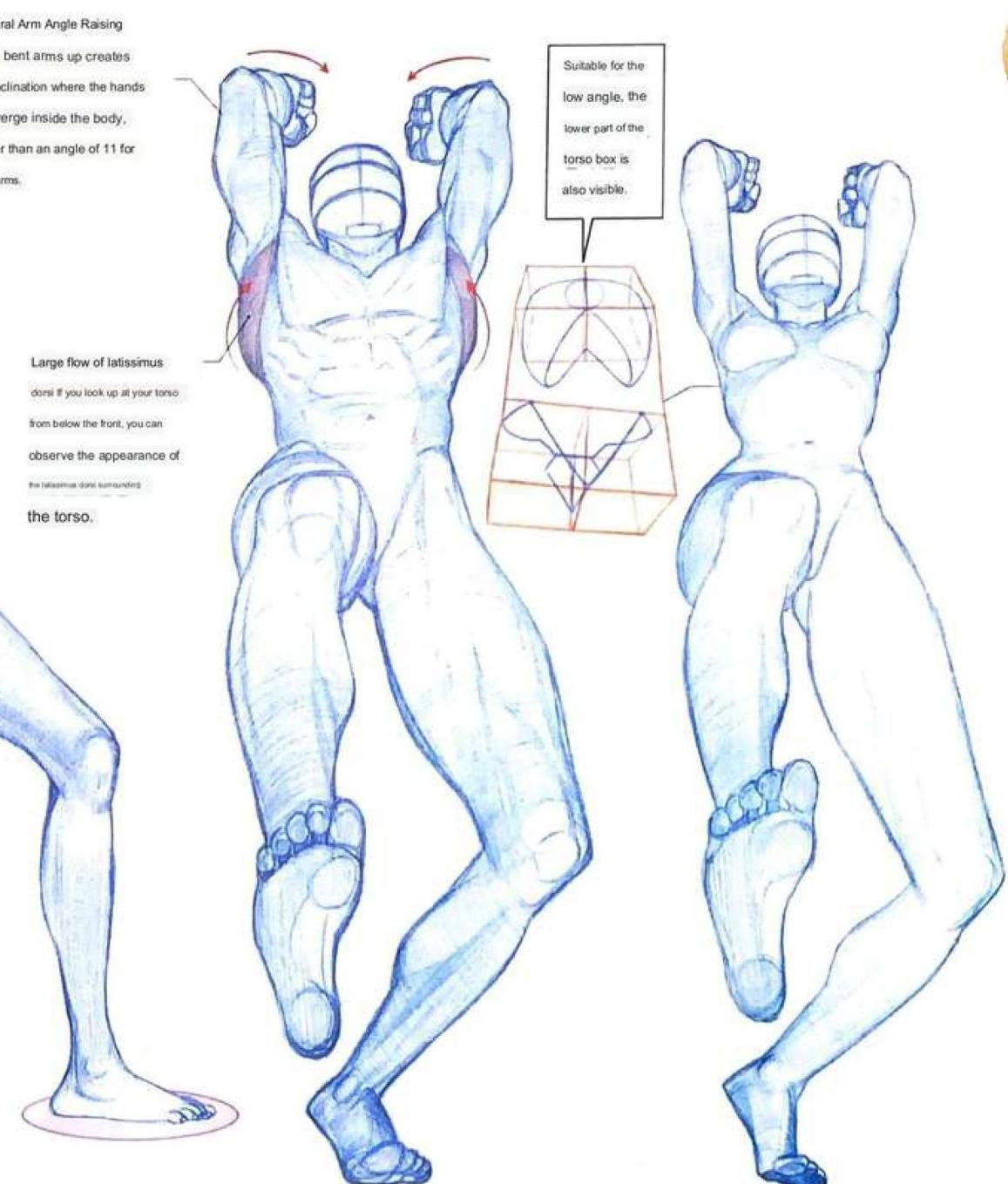
the pectoralis major muscle has a wide range of arm joints.

It is a muscle that is highly deformed by movement.



### Foot position in the direction of movement\*

As shown in the picture above, when the direction of motion  
is applied from top to bottom, the center of gravity swings  
back and forth, so the position of the feet must be spread  
forward and backward to maintain a stable balance.



## 6 Kick application posture

Preparation posture for kicking down with feet

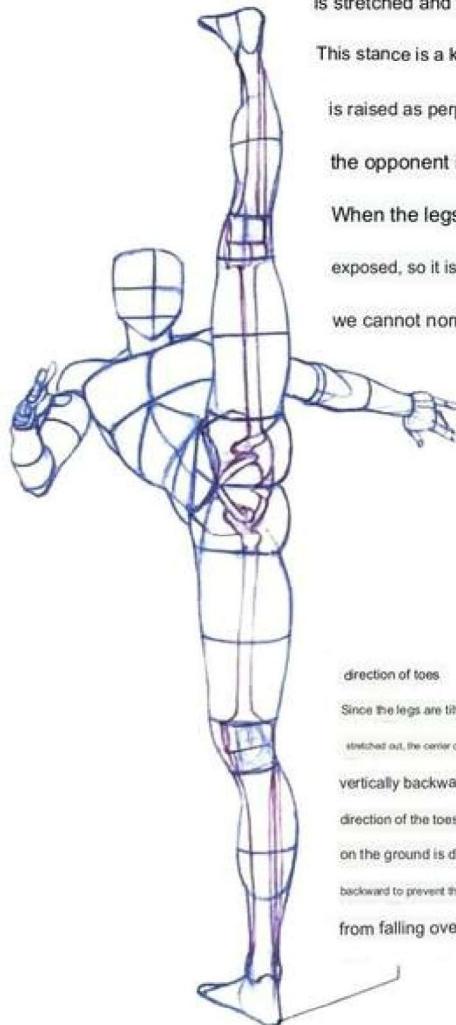
Why is kicking posture difficult to draw?

The technique of kicking differs depending on which direction the leg

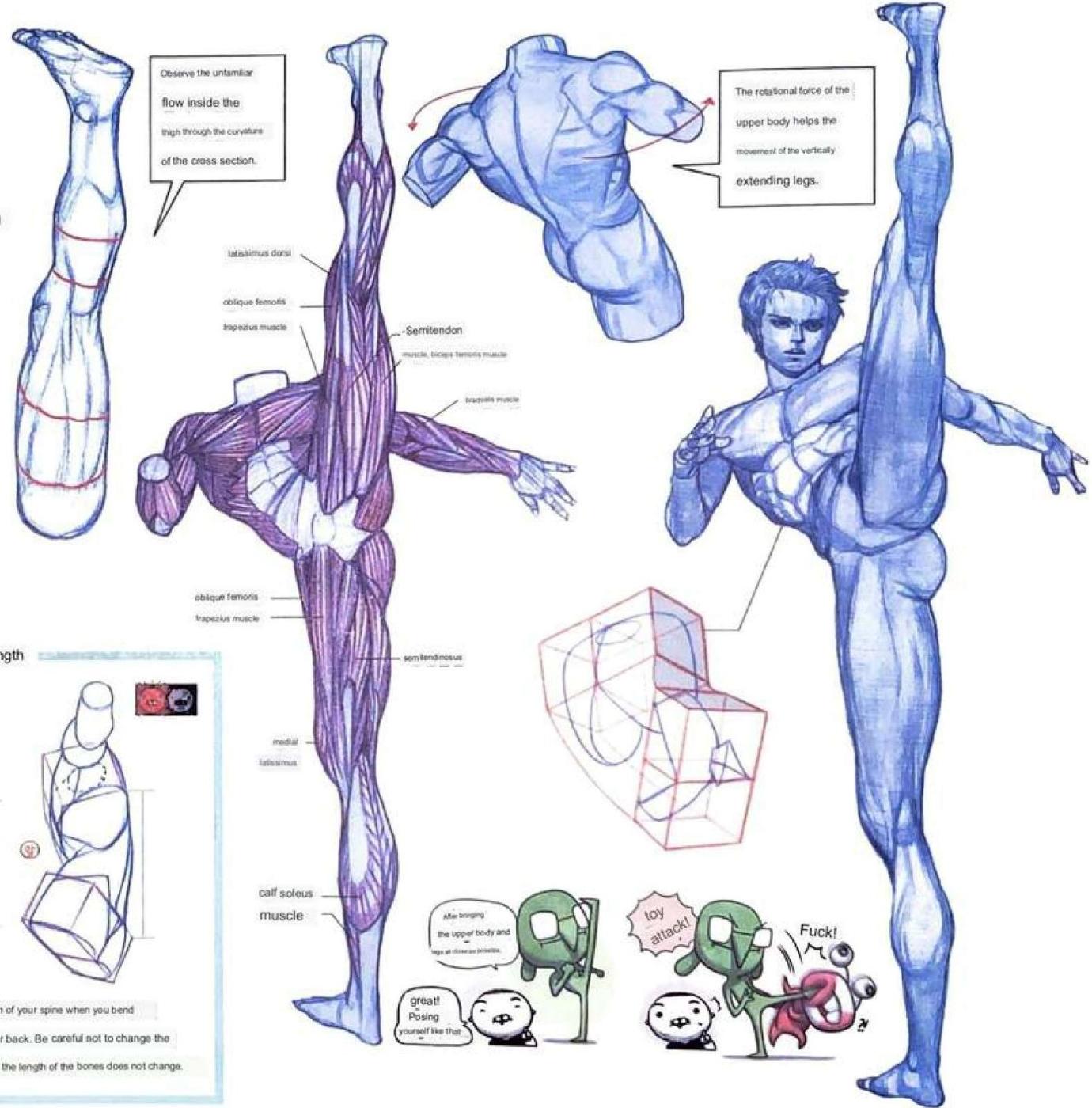
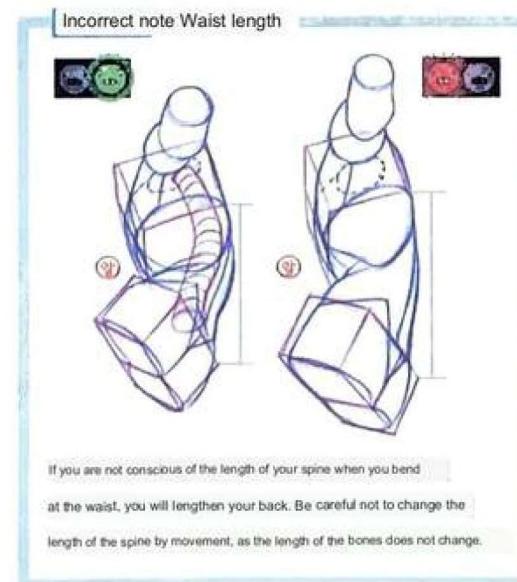
is stretched and which part of the foot is struck.

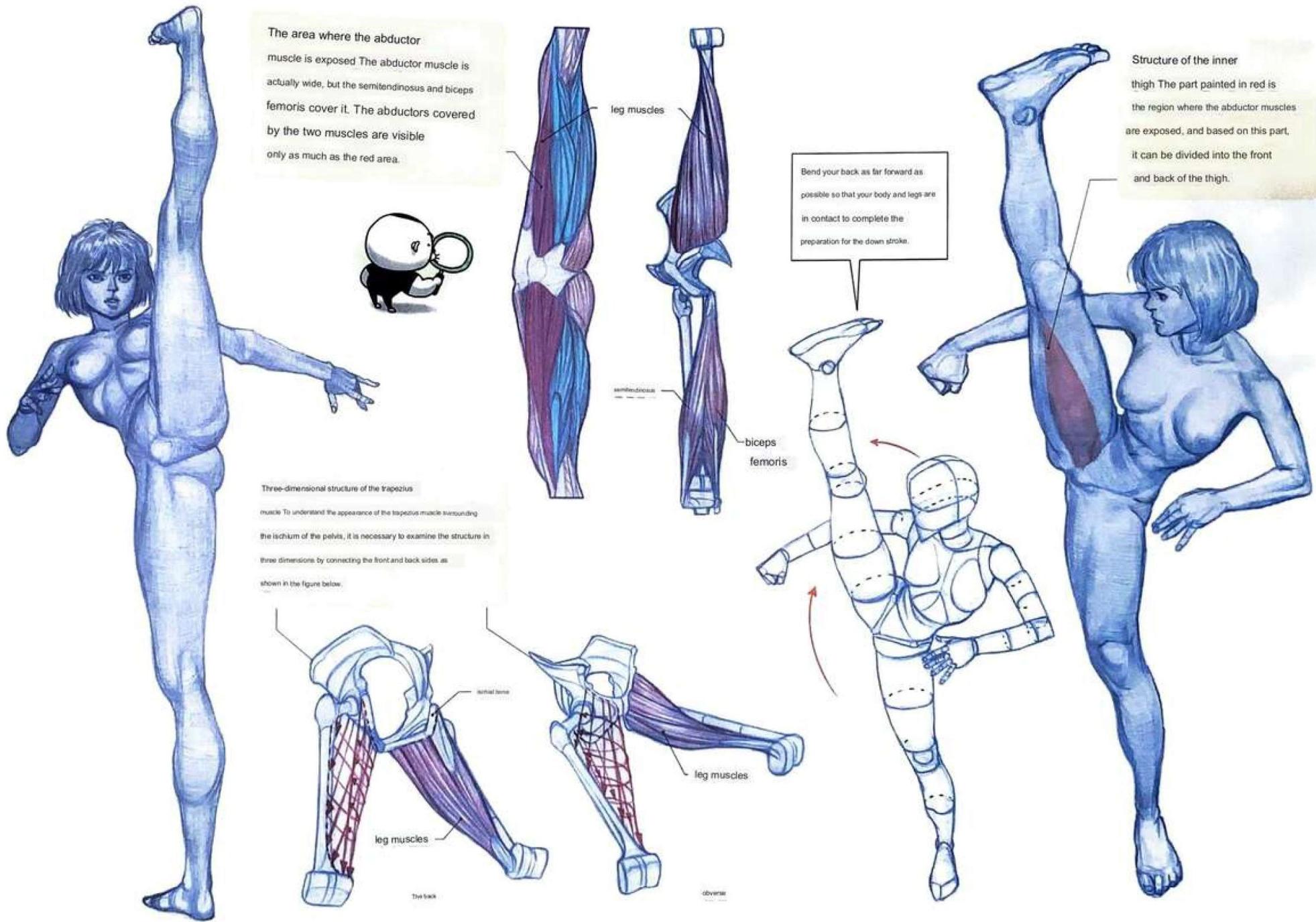
This stance is a kicking technique in which the foot is raised as perpendicular to the floor as possible and the opponent is kicked down with the heel.

When the legs are torn, the inside of the groin is exposed, so it is difficult to draw blind spots that we cannot normally see.

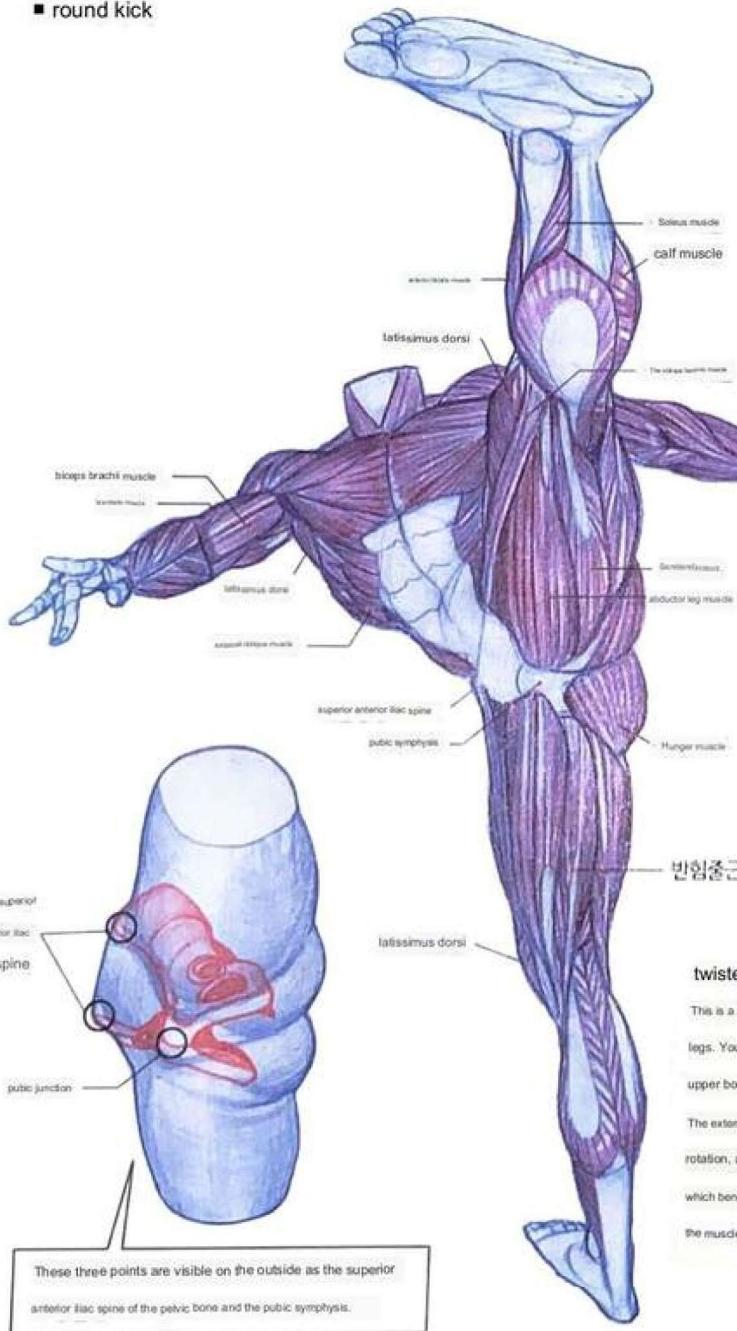


direction of toes.  
Since the legs are tilted vertically backward, the direction of the toes on the ground is directed backward to prevent the body from falling over.





■ round kick



Techniques according to foot height

Round kicks, in which the legs are rotated to hit the opponent with the instep or shin, are divided into low kicks, middle kicks, and high kicks depending on the height of the foot. This page is in high kick stance, with the foot lifted as high as possible to strike the opponent's head.



## Drawing step by step

muscles without catching the big flow.

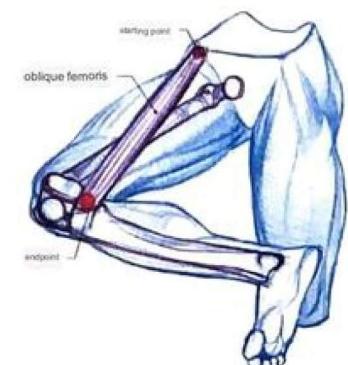
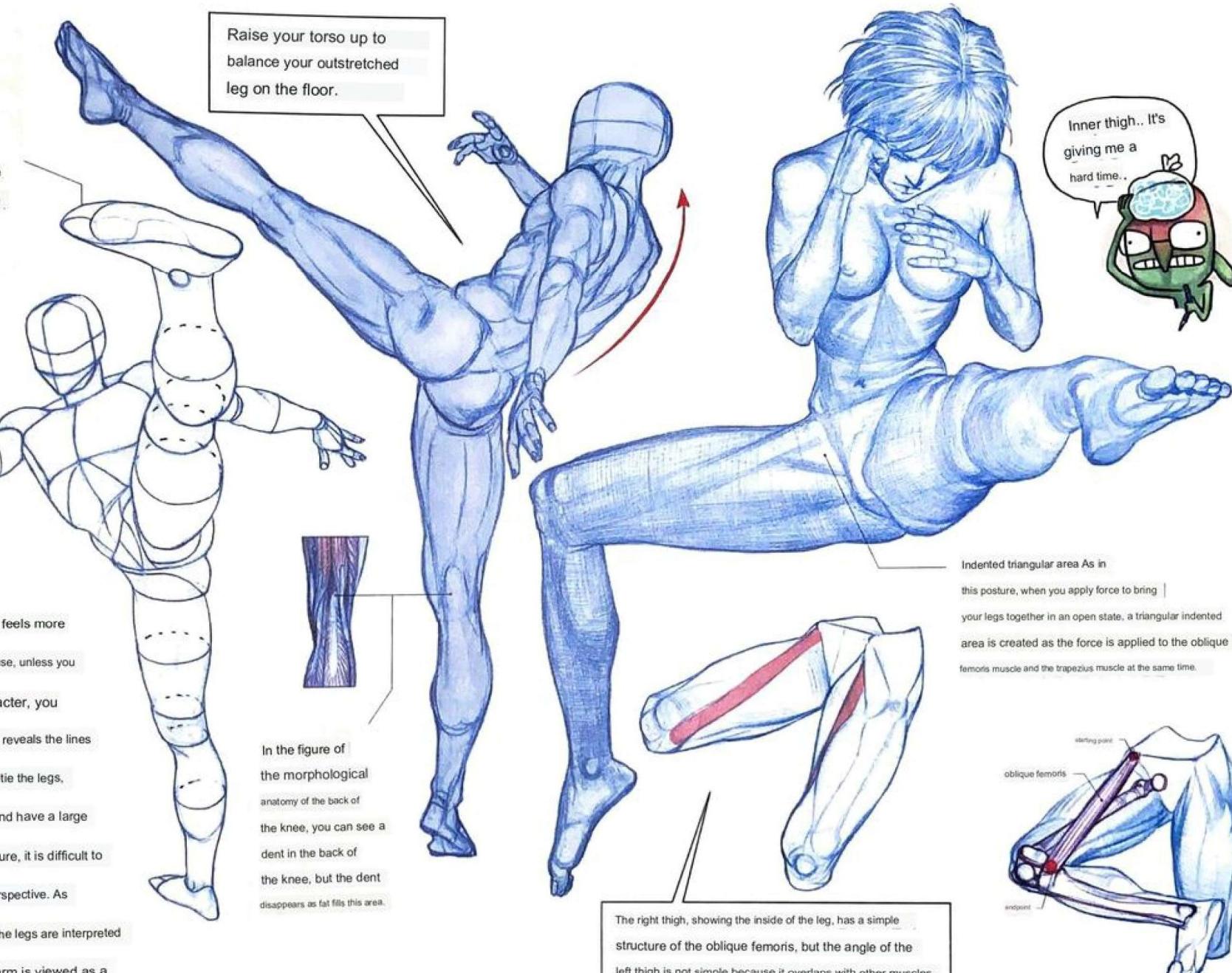
When drawing individual curves, the flow of small units is often expressed excessively, giving the impression that the bones are bent.

Don't look at the small flow from the beginning, express the big flow with a cylinder, and then describe the small flows in it!

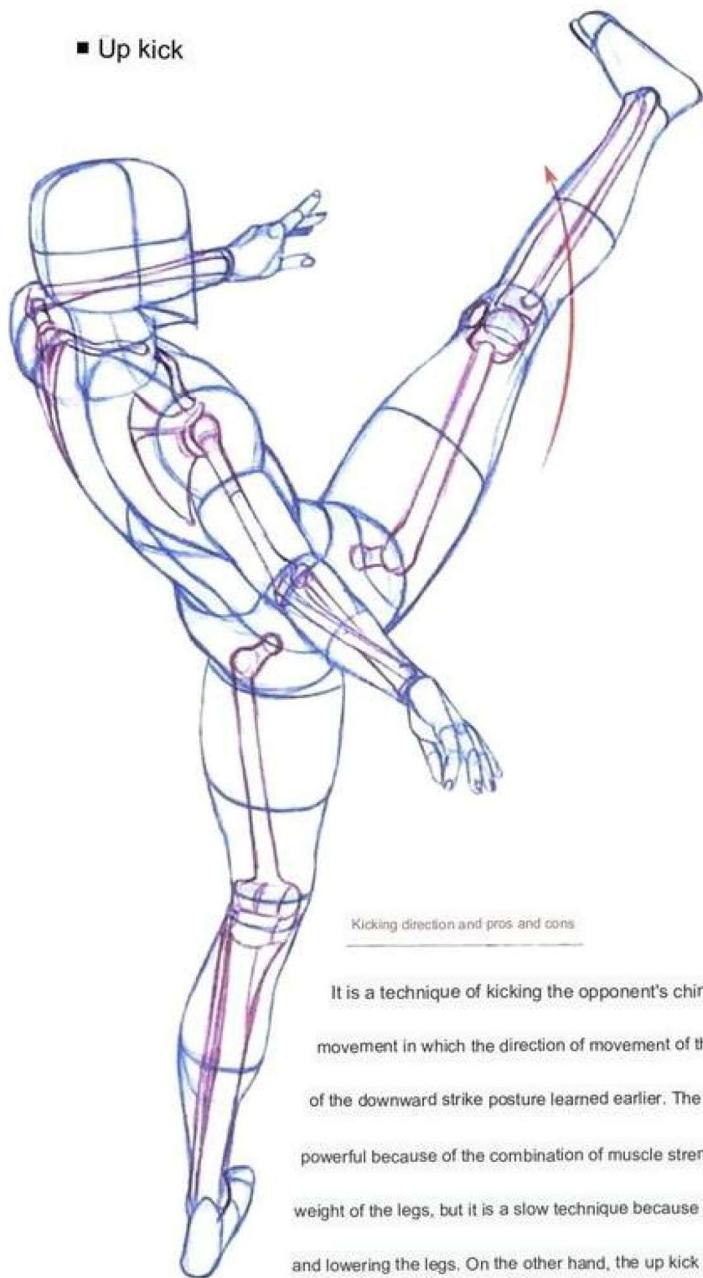


## lower body shape

The reason why the lower body feels more difficult than the upper body is because, unless you are drawing a superhero character, you don't have to draw a character that reveals the lines of the lower body. Also, in order to tie the legs, which are longer than the arms and have a large sense of volume, into a single figure, it is difficult to look at the picture from a larger perspective. As shown in the figure on the right, if the legs are interpreted as a larger cylinder just as the arm is viewed as a cylinder, the phenomenon of shortening can be easily expressed.

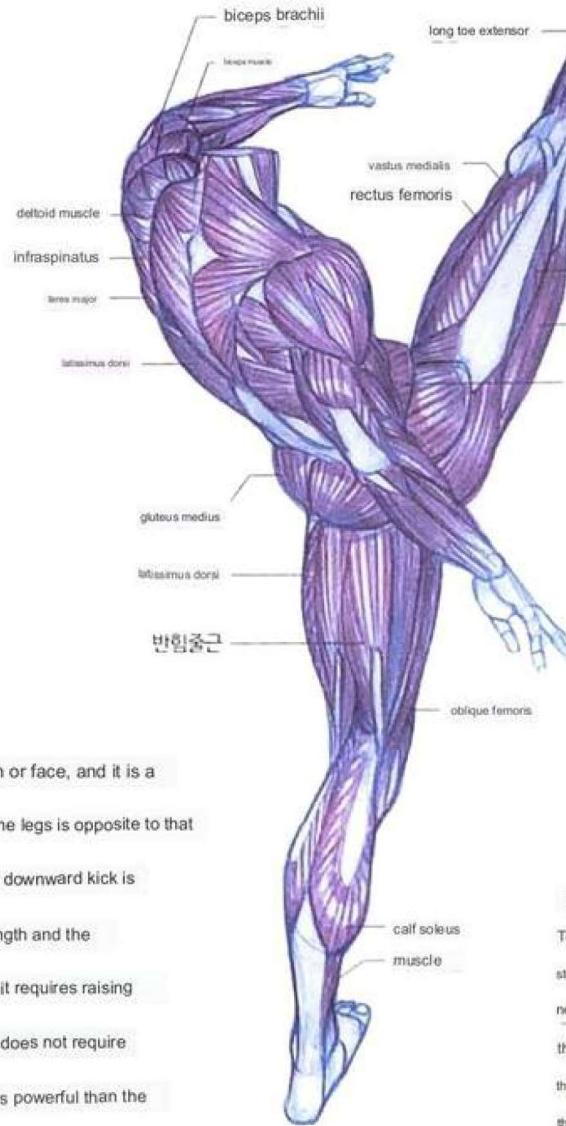


## ■ Up kick

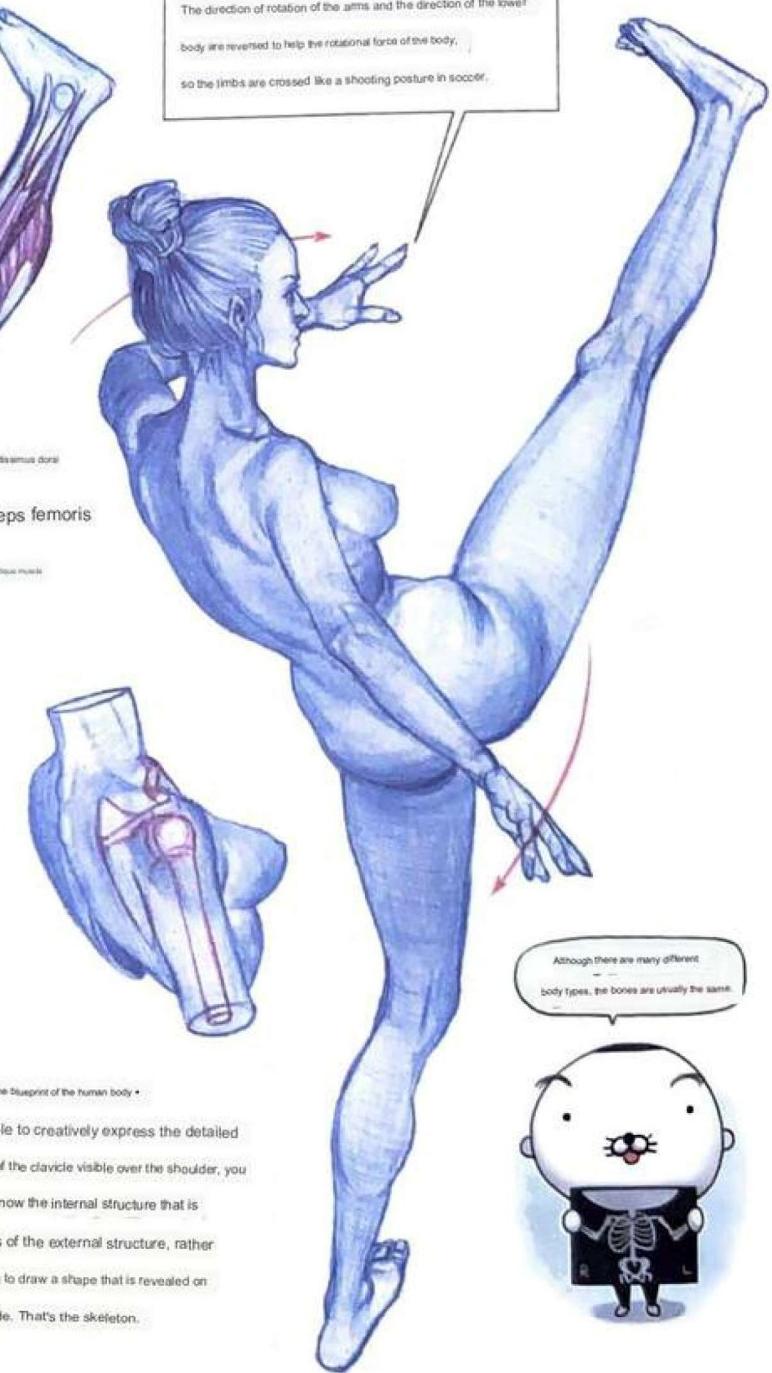


Kicking direction and pros and cons

It is a technique of kicking the opponent's chin or face, and it is a movement in which the direction of movement of the legs is opposite to that of the downward strike posture learned earlier. The downward kick is powerful because of the combination of muscle strength and the weight of the legs, but it is a slow technique because it requires raising and lowering the legs. On the other hand, the up kick does not require preparation, so it can attack at high speed, but it is less powerful than the down kick because it is kicked only with leg strength.



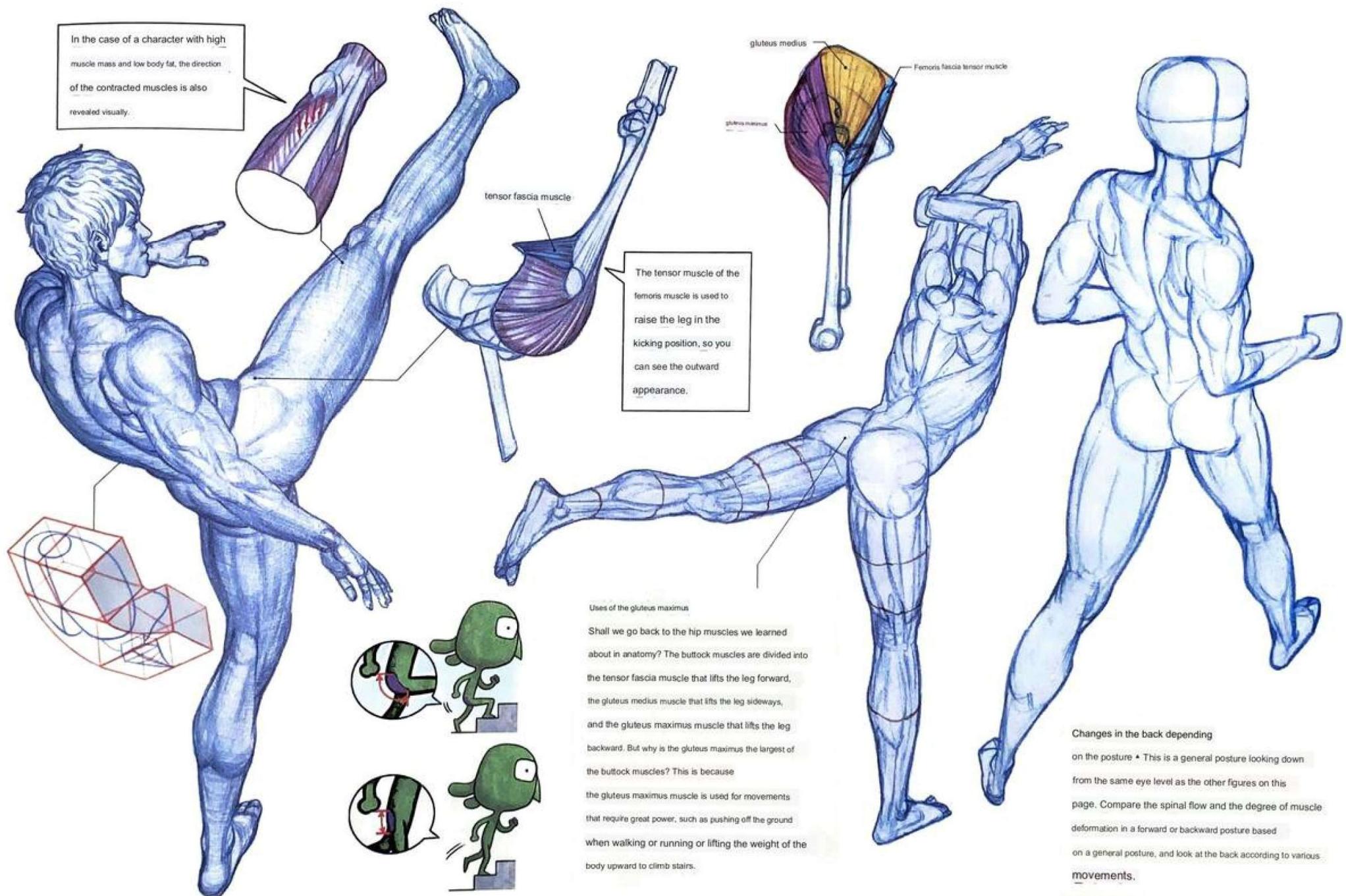
The direction of rotation of the arms and the direction of the lower body are reverted to help the rotational force of the body, so the limbs are crossed like a shooting posture in soccer.



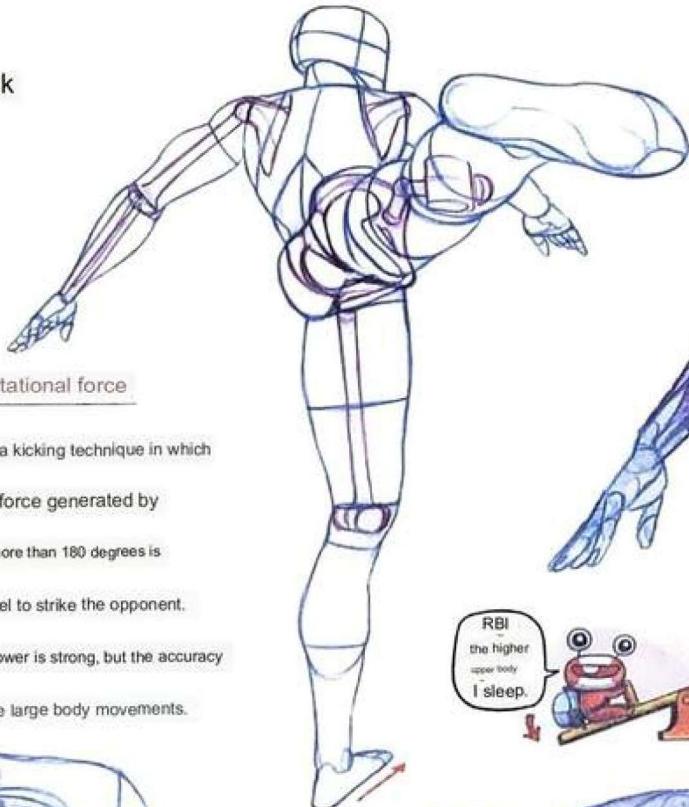
Skeleton, the blueprint of the human body ▶

To be able to creatively express the detailed structure of the clavicle visible over the shoulder, you need to know the internal structure that is the basis of the external structure, rather than trying to draw a shape that is revealed on the outside. That's the skeleton.



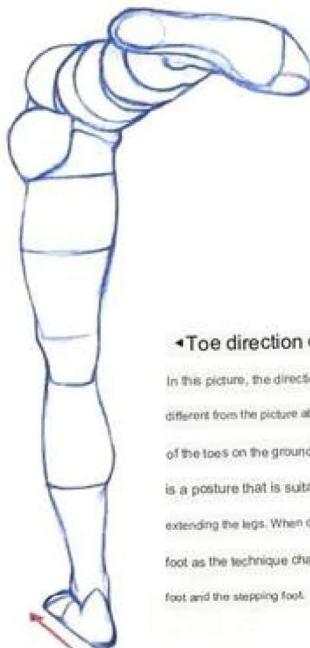


## ■ Back kick



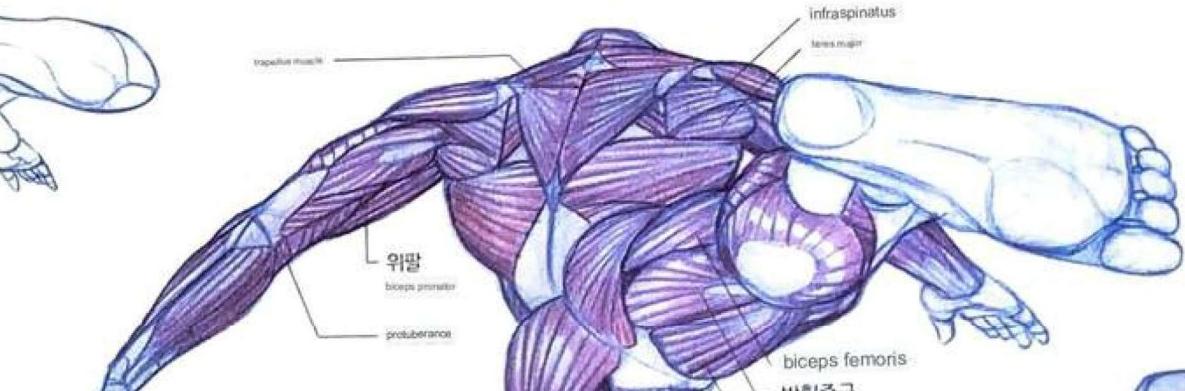
### kick using rotational force

The back kick is a kicking technique in which the centrifugal force generated by rotating the body more than 180 degrees is applied to the heel to strike the opponent. The destructive power is strong, but the accuracy is poor due to the large body movements.



#### Toe direction of the kick foot

In this picture, the direction of the tip of the foot on the ground is different from the picture above. The type of kick depends on the direction of the toes on the ground. The direction of the stepping foot in this figure is a posture that is suitable for kicking with the force of folding and extending the legs. When drawing a kick, pay attention to the direction of the foot as the technique changes depending on the direction of the kicking foot and the stepping foot.



#### kick back

#### in the attitude

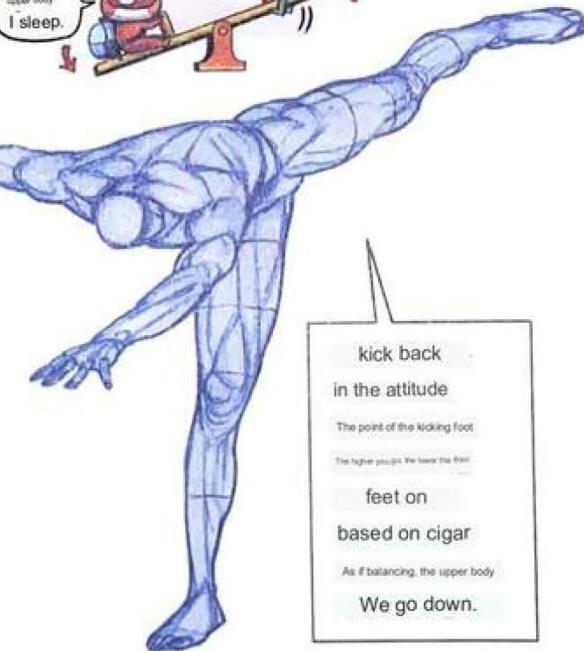
The point of the kicking foot

The higher you go, the lower the floor

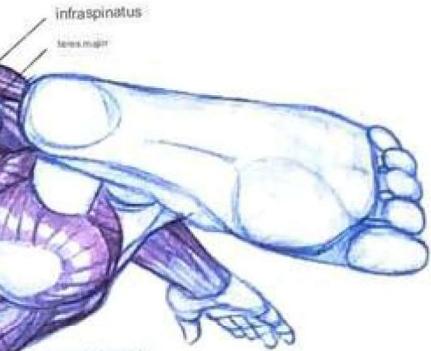
feet on  
based on cigar

As if balancing, the upper body

We go down.



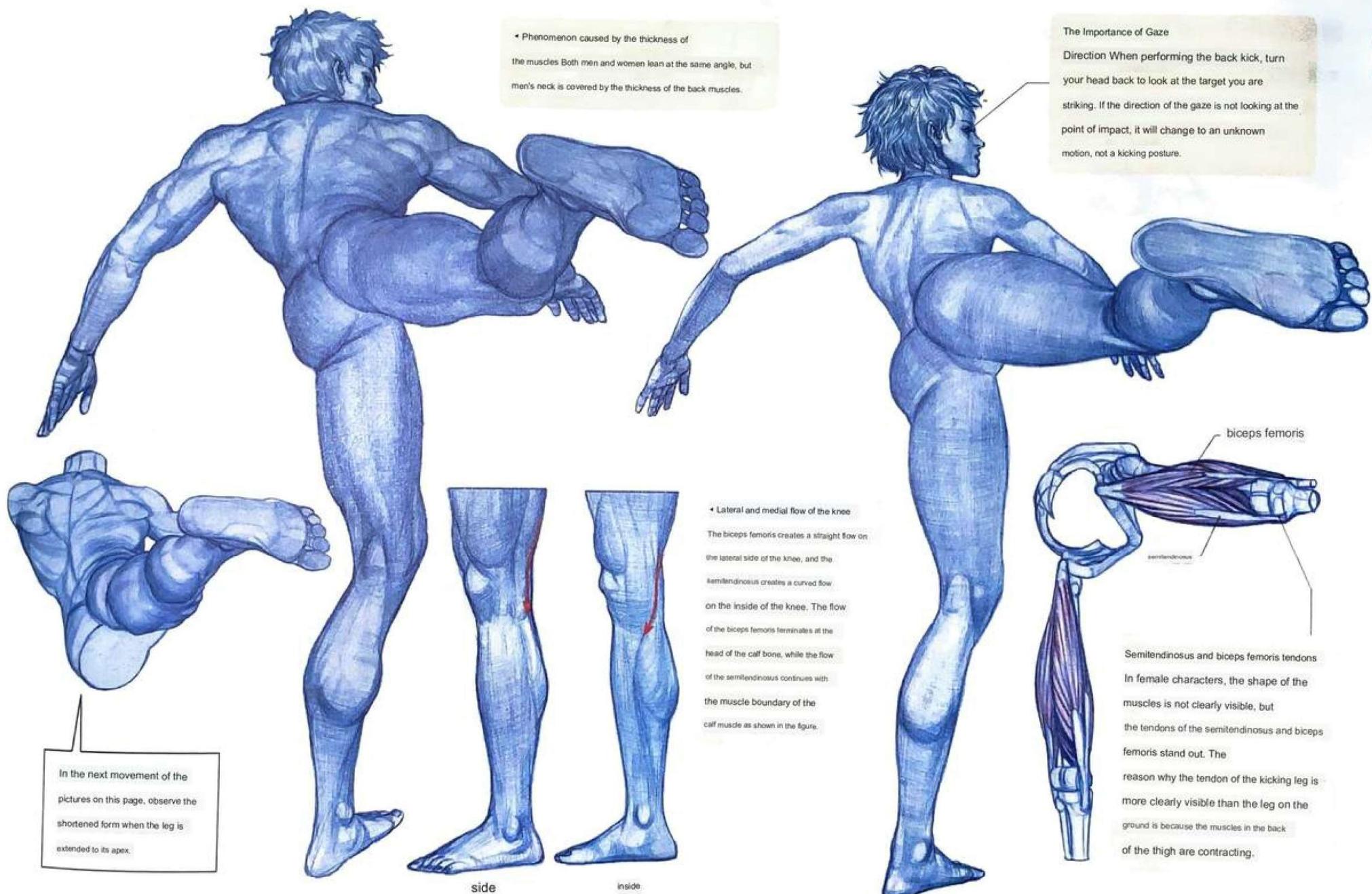
#### calf muscle



#### Observing the linking motion

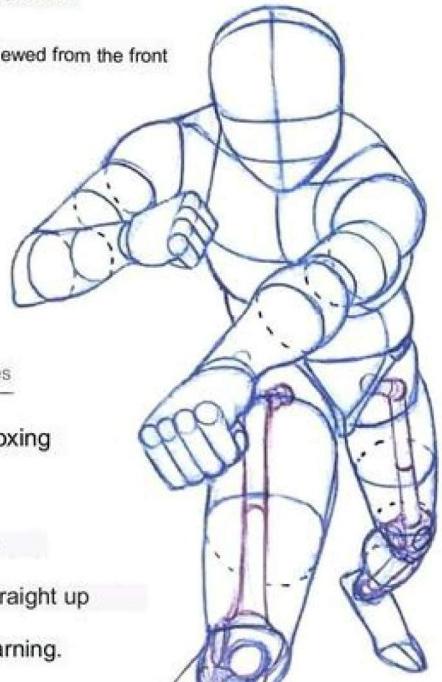
This is the previous stage of the background kick, just before the foot is stretched out with the rotational power of the body. The reason why the legs are folded and rotated is to balance like a top.





## 2 Punch application posture

■ Straight posture viewed from the front



boxing basic punches

the basics of boxing

Punch is 'house' and

It is 'straight'.

This time straight up

I will focus on learning.

Fist like the picture on the right

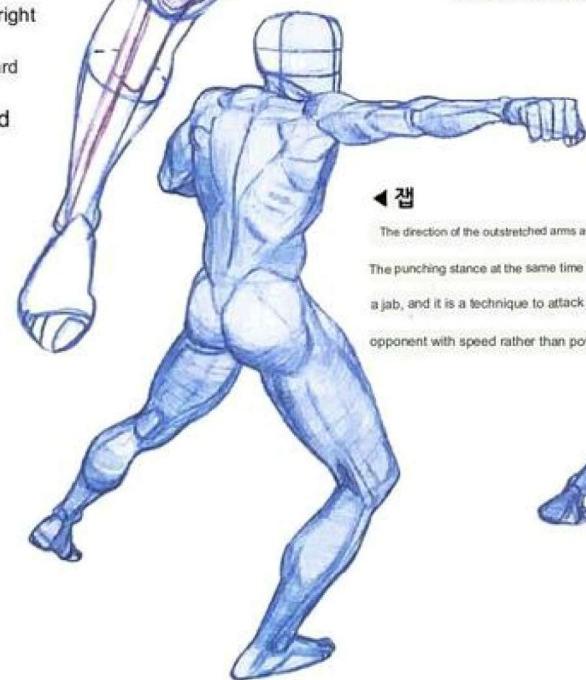
arms outstretched and forward

legs would be reversed

posture when

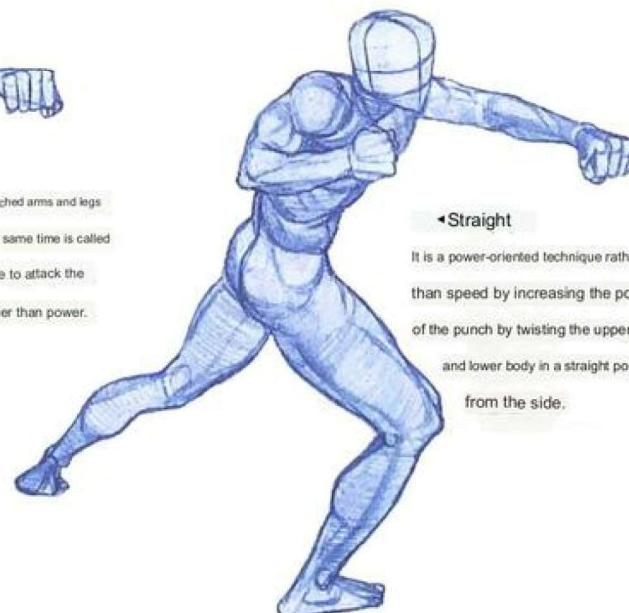
straight

do.



Action seen through oversight •

When shooting an action scene, you can create a much more dynamic and realistic picture of over-perspective when the camera moves closer to the actor than when the camera and the actor are far away and zoomed in. As in this painting viewed with oversight, when the size of the fist increases, it gives the impression that the situation is happening right in front of your eyes.



◀ Jab

The direction of the outstretched arms and legs

The punching stance at the same time is called a jab, and it is a technique to attack the opponent with speed rather than power.

◀ Straight

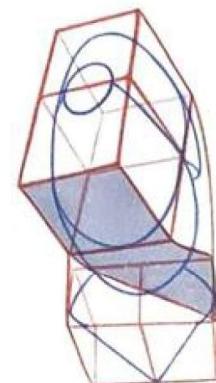
It is a power-oriented technique rather than speed by increasing the power of the punch by twisting the upper and lower body in a straight posture from the side.



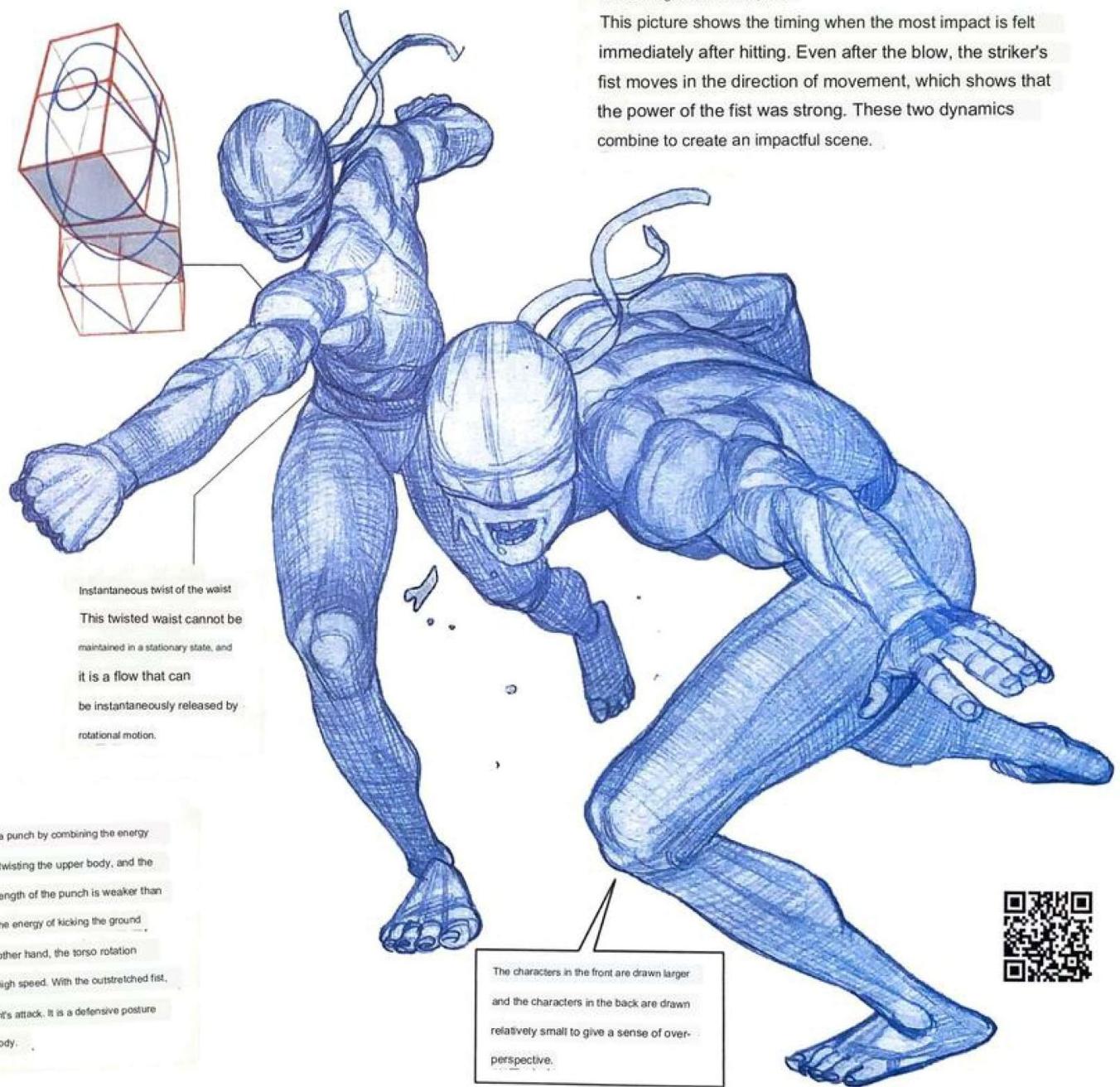


▲ The principle of the posture in which power is transmitted

to the fist. Straight is a technique that increases the power of a punch by combining the energy of kicking the ground with the foot, the rotational force of twisting the upper body, and the power of extending the arm. In the case of the jab, the strength of the punch is weaker than that of the straight because the punch is delivered only with the energy of kicking the ground with the foot and the power of extending the arm. On the other hand, the torso rotation movement is omitted, allowing you to attack the opponent at high speed. With the outstretched fist, raise your fist close to your face to defend against an opponent's attack. It is a defensive posture to protect the brain, which is the most vulnerable part of the body.



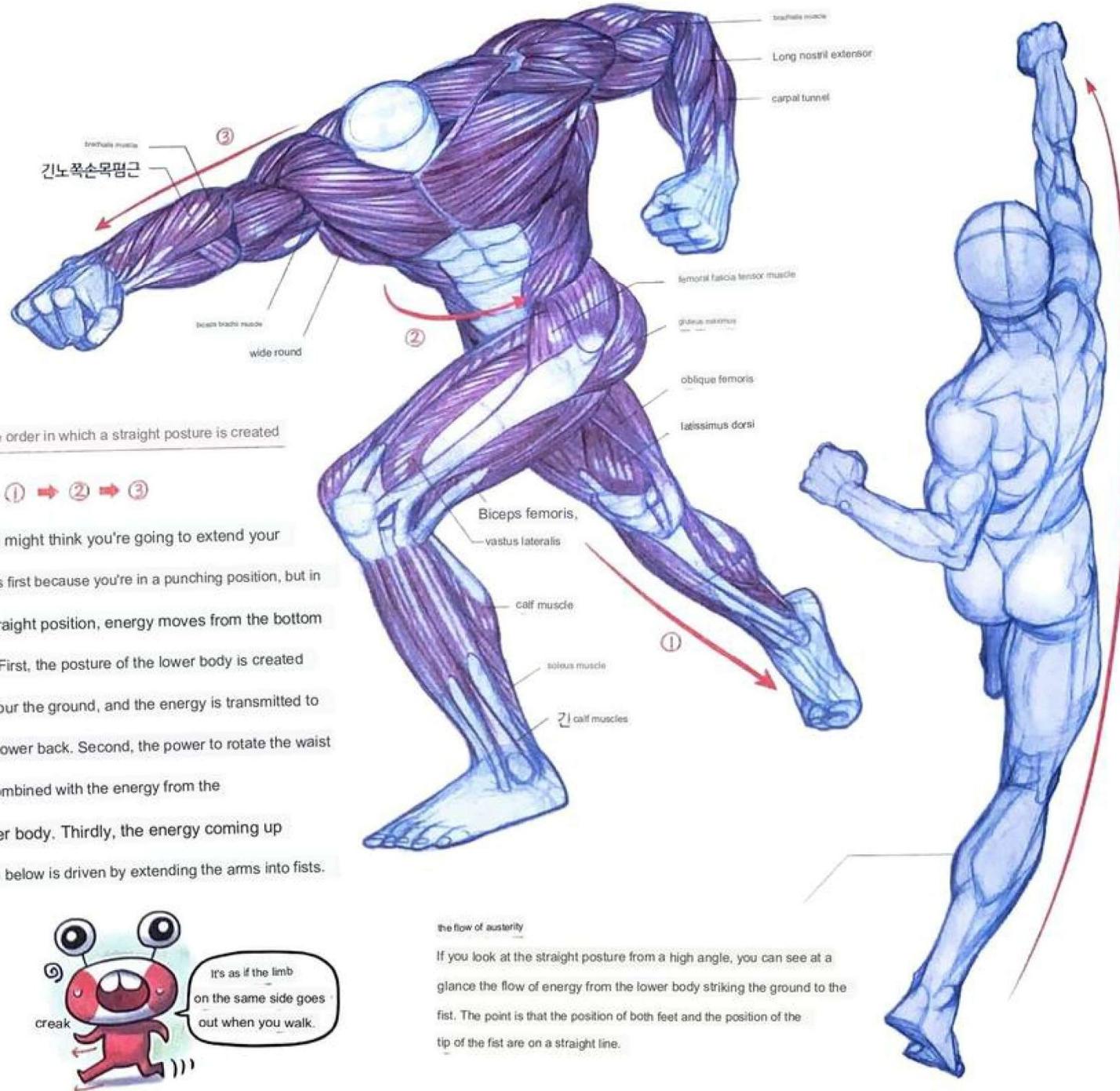
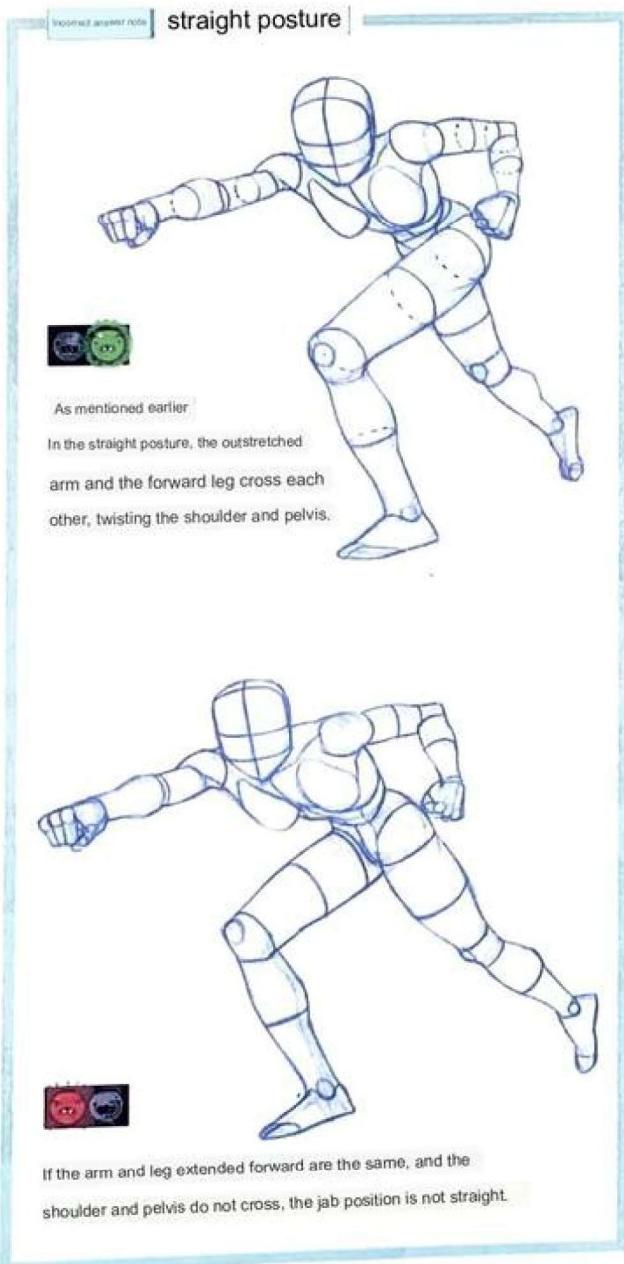
Instantaneous twist of the waist  
This twisted waist cannot be maintained in a stationary state, and it is a flow that can be instantaneously released by rotational motion.



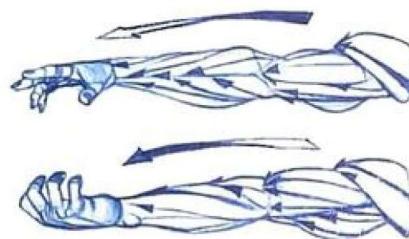
The characters in the front are drawn larger and the characters in the back are drawn relatively small to give a sense of over-perspective.



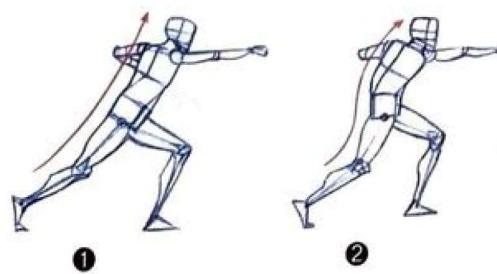
■ Straight posture seen from the half side



Angle where the neck is not visible> In a position where the neck is covered by overlapping faces, even a small change in the position of the face can shorten or lengthen the neck.

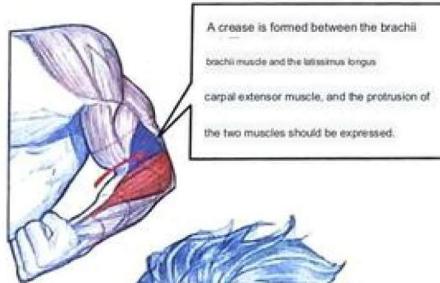


Understanding the flow in the direction of the muscles • When looking at the flow of the arm from the inner side, when the back of the hand is facing the sky, the direction of the muscle is straight, whereas when the palm is facing the sky, the muscle is twisted and has a curved flow. Understand the direction of the overall muscle based on the side view, and change the flow according to the viewing angle.

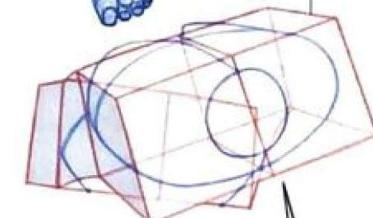
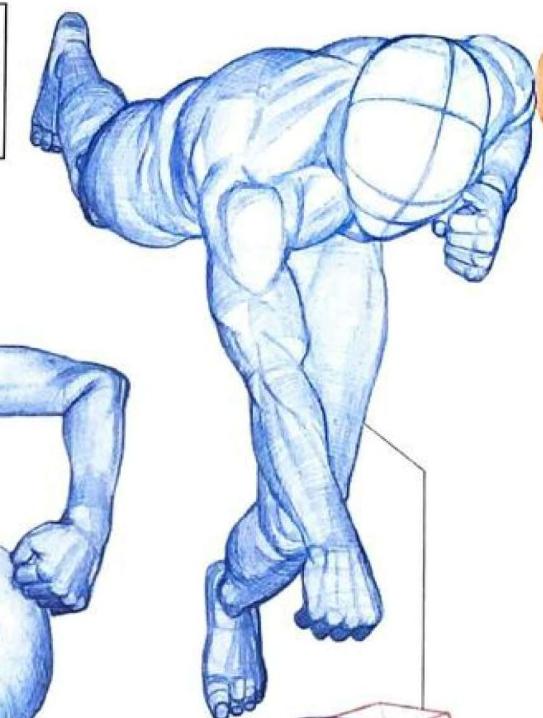


#### Flow of straight posture seen from the side

Like No. 1, the lower body must fall back and the flow of the lower body and spine must be stretched to deliver the energy that pushes the ground to the tip of the fist. However, if you bend your back like No. 2 and create a undulating, curved flow, the energy coming up from the lower body is buffered and the power of the punch weakens.



A crease is formed between the brachioradialis muscle and the latissimus dorsi muscle, and the protrusion of the two muscles should be expressed.



Check the torso box to see how much the torso and pelvis are twisted.

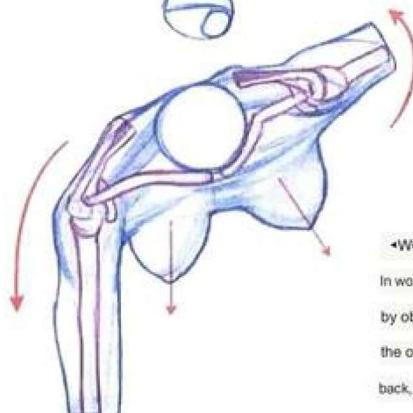


Let's understand the structure of the curvature caused by the weight of the outer side blade when the foot touches the floor through a simple figure.

## ■ Fisting

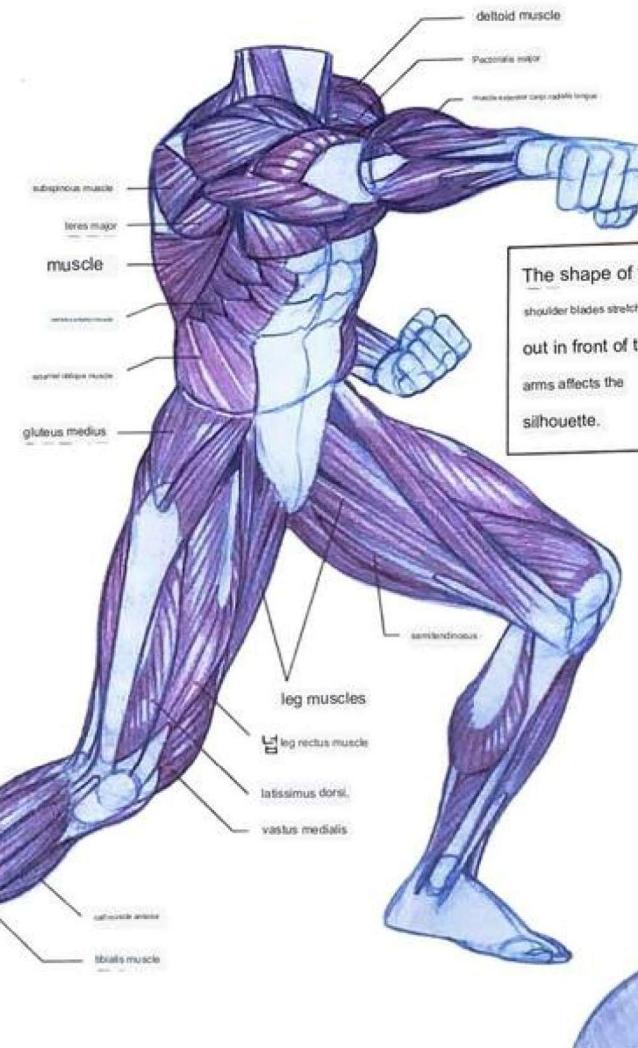
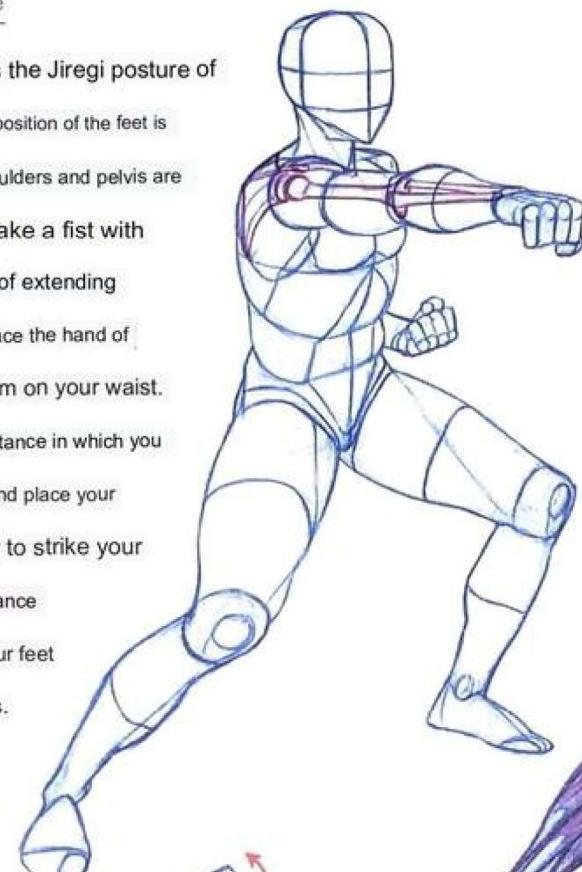
### training posture

This posture is the Jiregi posture of Taekwondo. The position of the feet is fixed and the shoulders and pelvis are not shifted. Make a fist with only the power of extending your arm, and place the hand of the opposite arm on your waist. Unlike a boxing stance in which you twist your body and place your feet diagonally to strike your opponent, this stance only spreads your feet out to the sides. It's a feature.

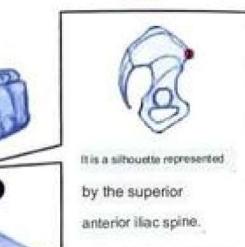
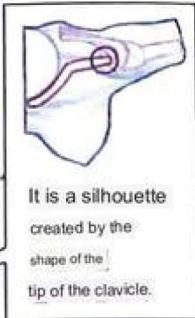
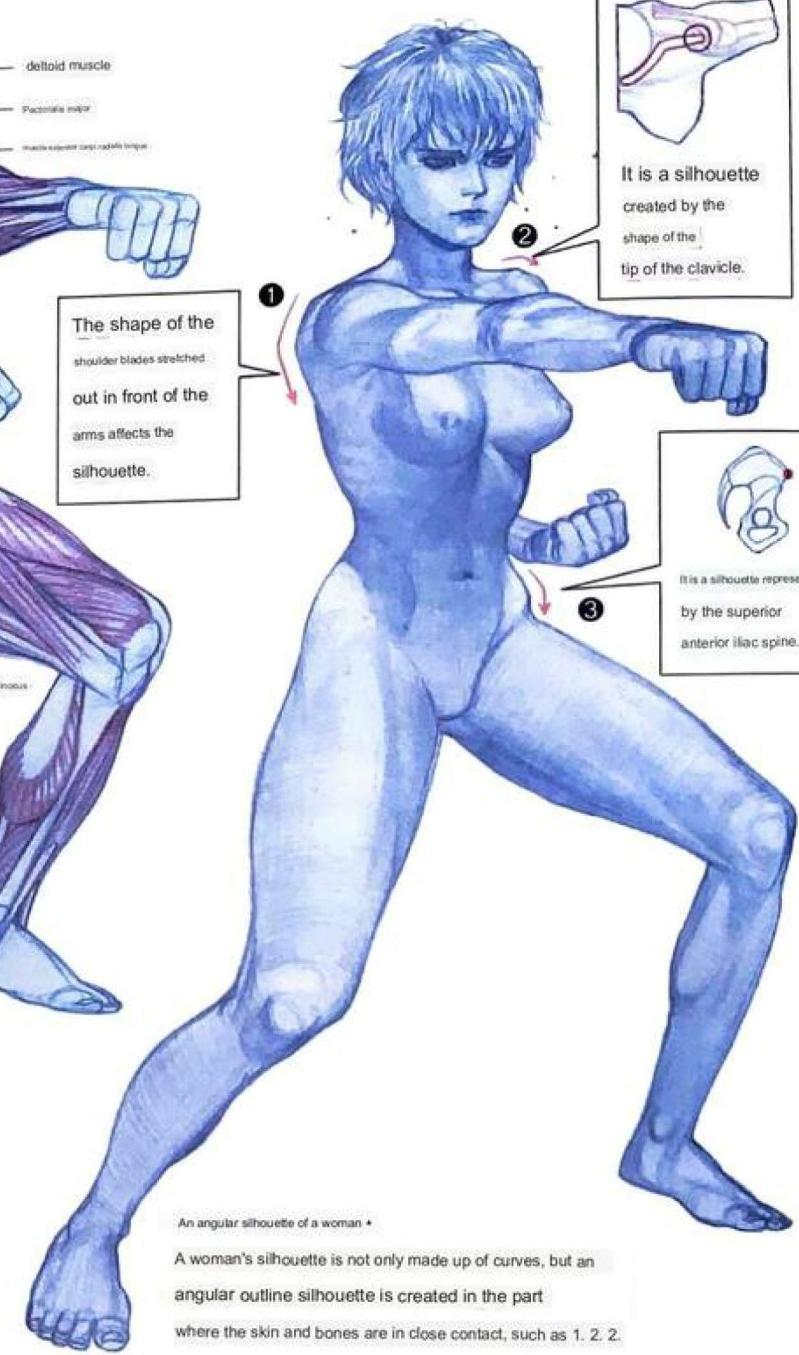


◀ Women's shoulder movement seen from intuition

In women, the distance between the skin and the bone is close, so you can clearly see the curvature of the bone by observing it intuitively. The shoulder blade of the outstretched arm is pulled along the arm, making the outline of the bone more prominent, and the shoulder blade of the opposite arm, which is leaned back, is blurred as it approaches the spine. In female breasts, the nipples diverge radially from the body.



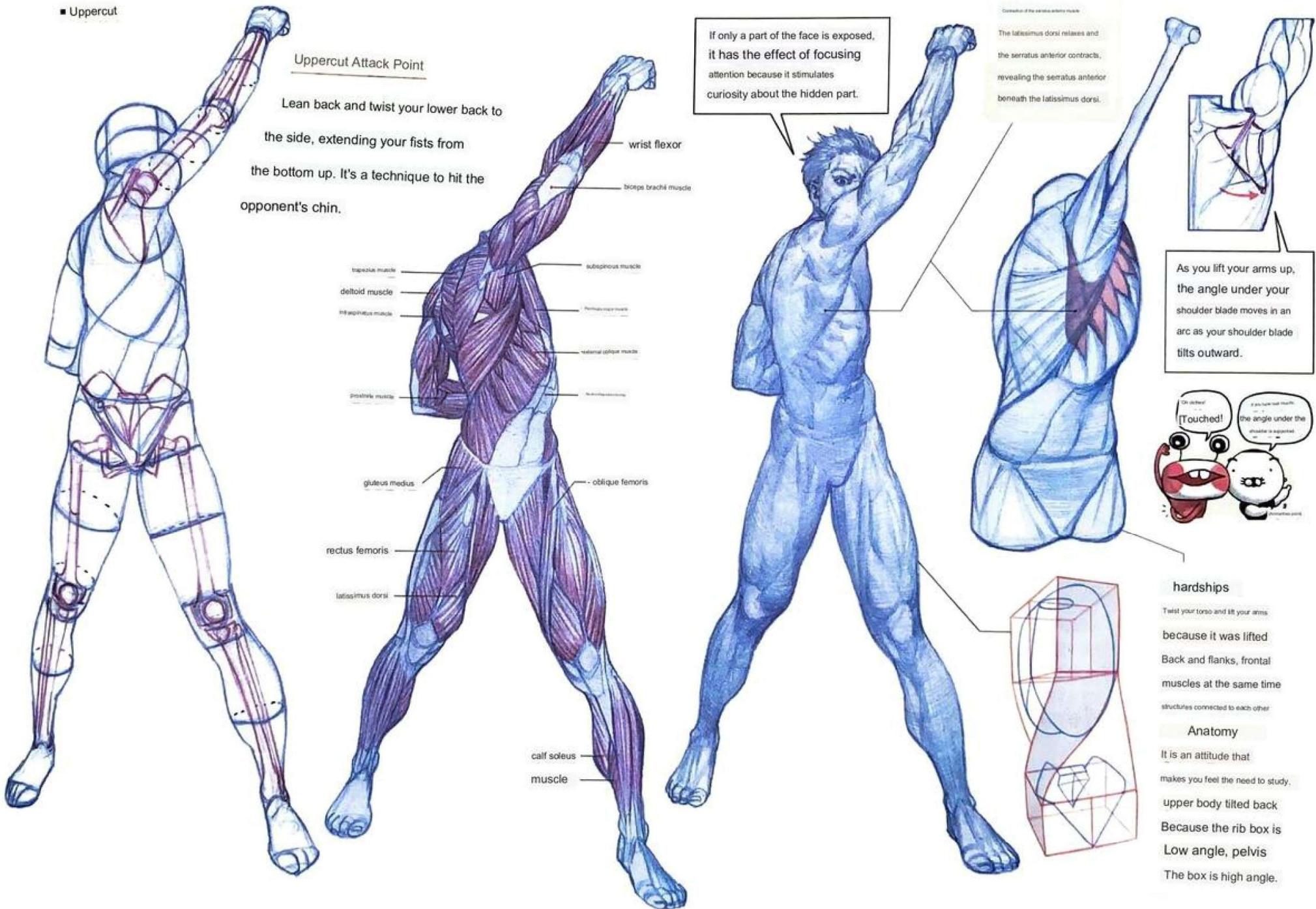
The shape of the shoulder blades stretched out in front of the arms affects the silhouette.



An angular silhouette of a woman \*

A woman's silhouette is not only made up of curves, but an angular outline silhouette is created in the part where the skin and bones are in close contact, such as 1. 2. 3.

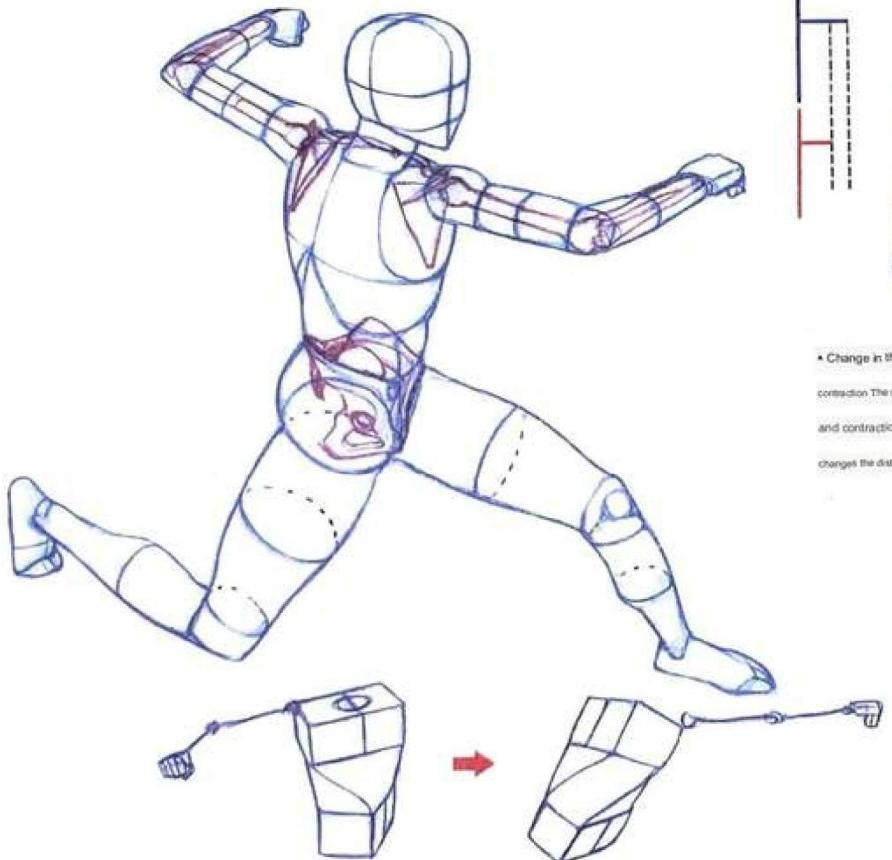
## ■ Uppercut



■ Continuous Hook Punch

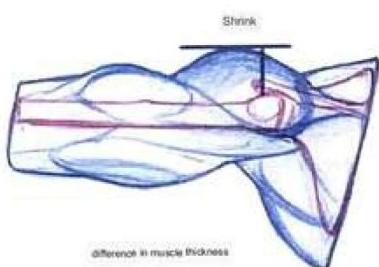
consecutive punches

In real fighting situations, most of the attacks do not end with a single hit, but continuously attack. The person on this page is in a stance of punching in a row.

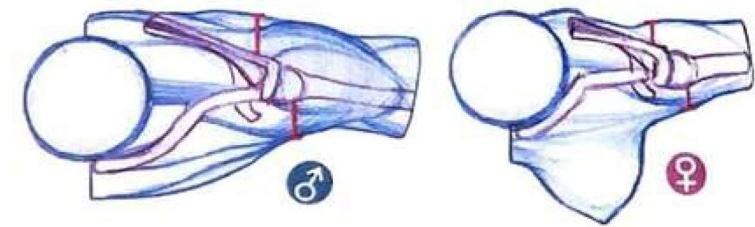


The energy flow generated by the rotation of the torso.

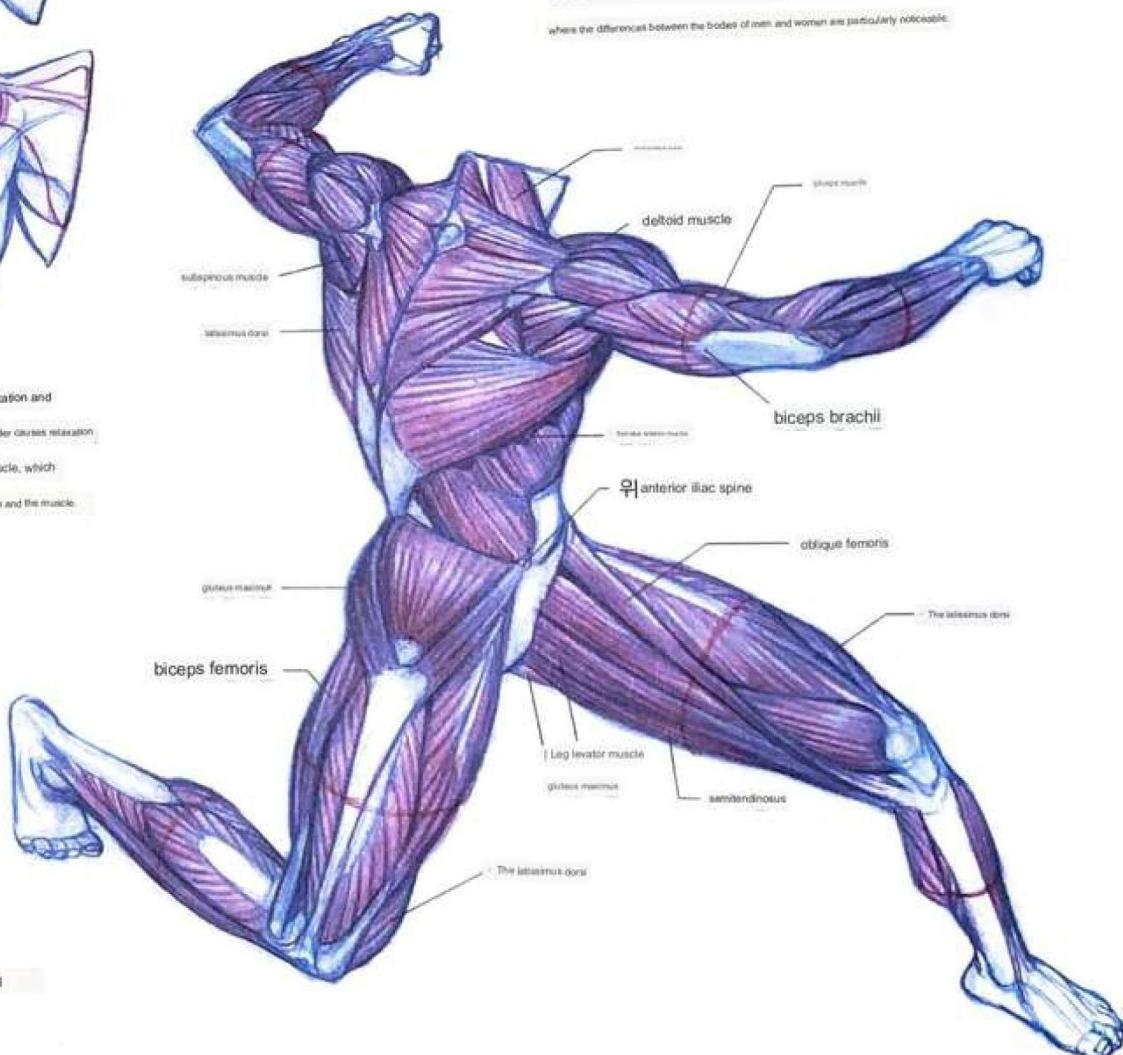
Twist the upper body as far back as possible to lengthen the rotating line, increasing the energy in the fist. In addition to striking, when throwing something or swinging a tool, the energy of the arms and the rotational kinetic energy of the upper body combine to produce strong power.

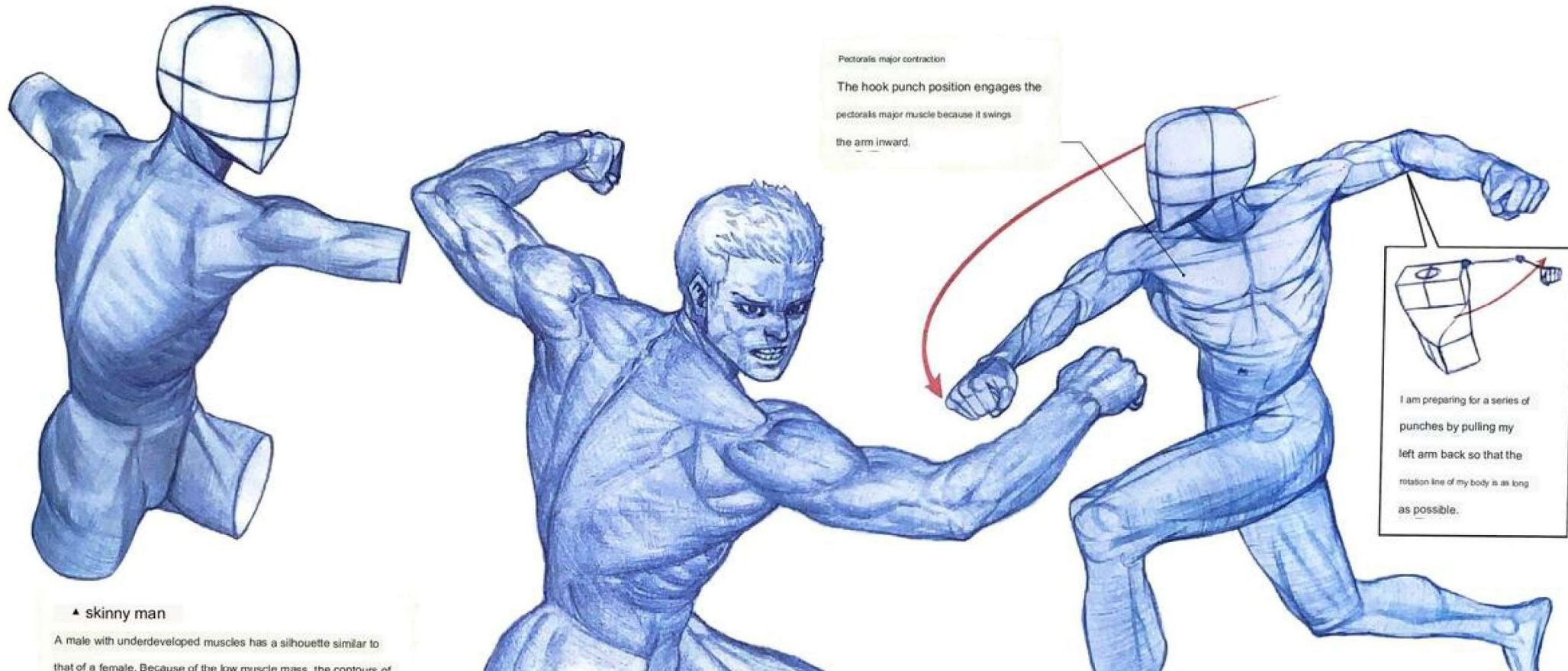


• Change in the thickness of relaxation and contraction. The movement of the shoulder causes relaxation and contraction of the deltoid muscle, which changes the distance between the bone and the muscle.



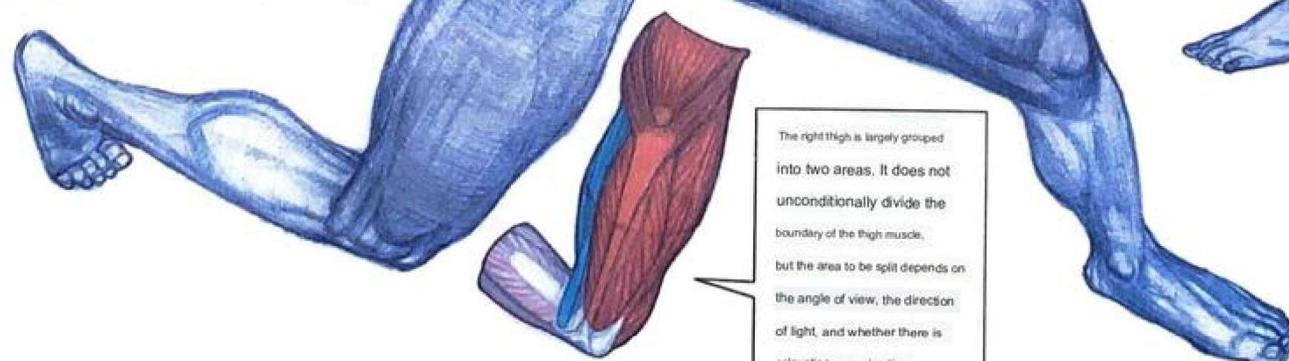
Differences in the thickness of the shoulders of men and women • Compare the thickness of the shoulders and the distance between the bone and flesh, where the differences between the bodies of men and women are particularly noticeable.





## ▲ skinny man

A male with underdeveloped muscles has a silhouette similar to that of a female. Because of the low muscle mass, the contours of the ribs create contrast. The thickness of the trapezius muscle is low, so the neck is exposed, and the boundary of the latissimus dorsi muscle is not clear.



## ▲ Features of the hook punch

'Hook' is a posture in which you swing your fist in a curved line rather than extending it straight toward the opponent like the punching posture you saw earlier. It has more power than straight fists, but it is easier for opponents to defend.



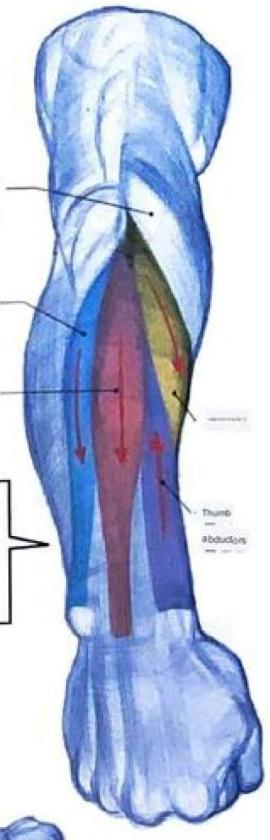
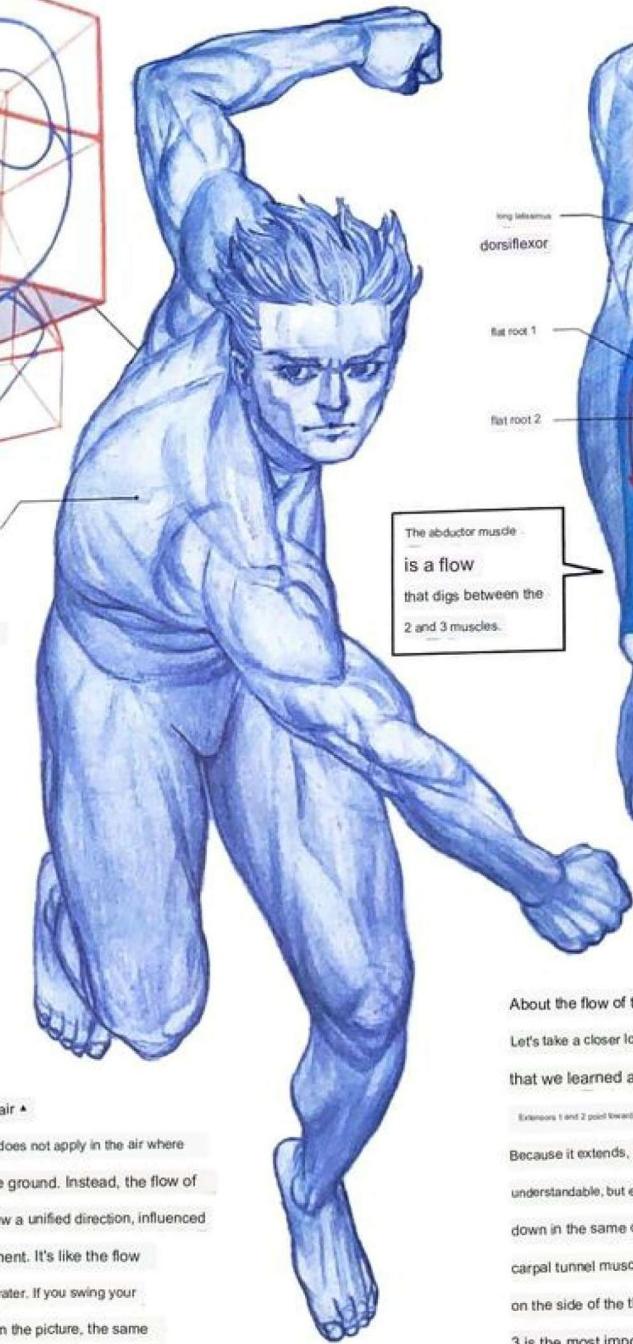
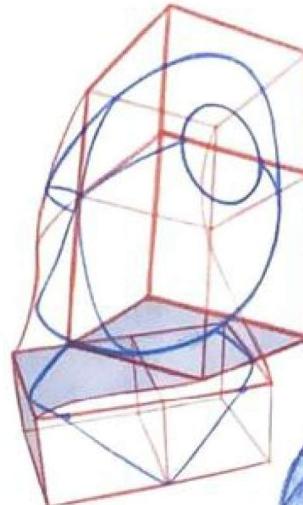
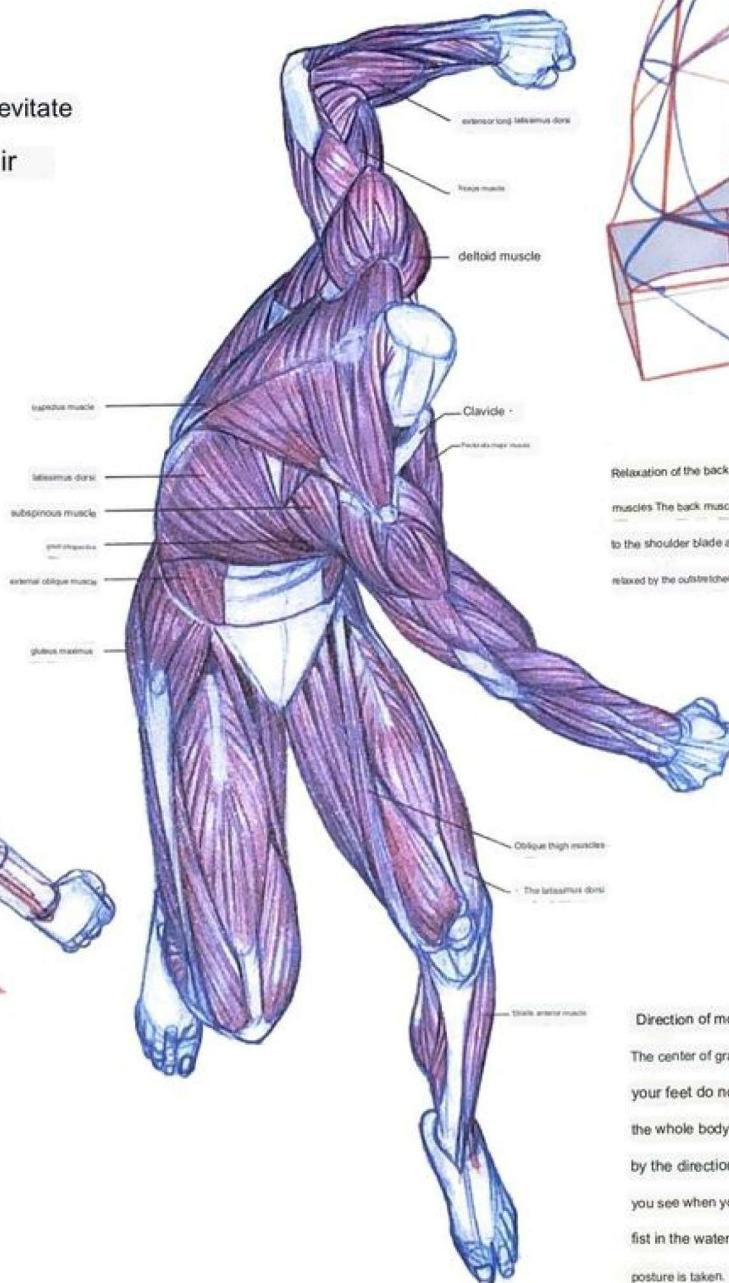
#### ■ Punch in the air

direction of punch

A superhero character who can levitate

A downward punch in the air

It's a posture.



**Relaxation of the back**  
muscles The back muscles attached  
to the shoulder blade are pulled and  
relaxed by the outstretched arm.

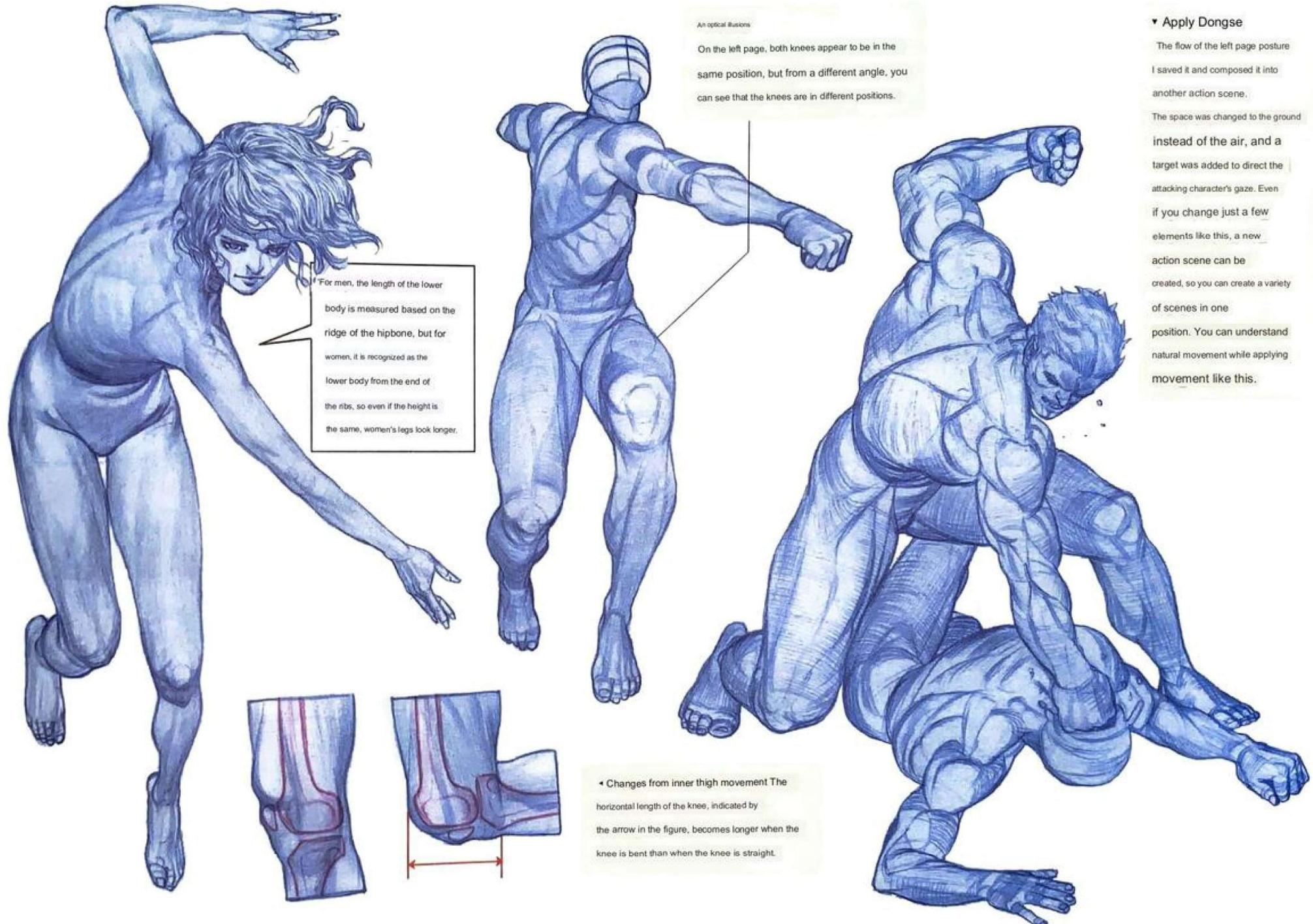
#### Direction of motion in the air \*

The center of gravity theory does not apply in the air where your feet do not touch the ground. Instead, the flow of the whole body should show a unified direction, influenced by the direction of movement. It's like the flow you see when you swim in water. If you swing your fist in the water as shown in the picture, the same posture is taken.

#### About the flow of the forearm\*

Let's take a closer look at the wrist extensors that we learned about in Chapter 3.

Because it extends, the flow relatively easily goes understandable, but extensor muscle 3 is down in the same direction as the extensor carpal tunnel muscle and attaches to the wrist on the side of the thumb. Extensor 3 is the most important muscle in the forearm because it has an irregular shape.

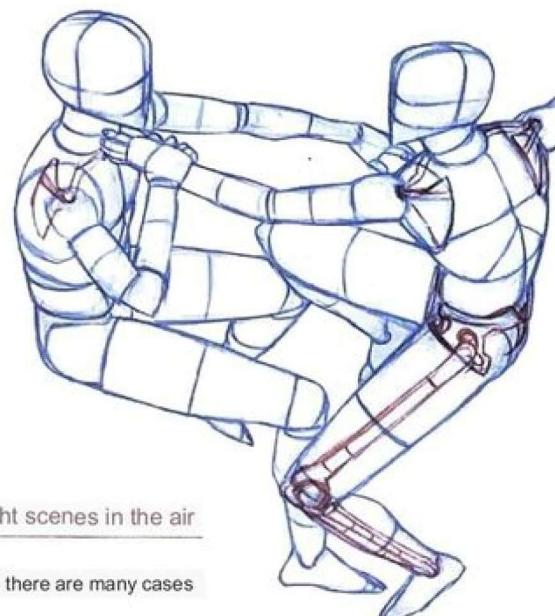


#### ▼ Apply Dongse

The flow of the left page posture I saved it and composed it into another action scene. The space was changed to the ground instead of the air, and a target was added to direct the attacking character's gaze. Even if you change just a few elements like this, a new action scene can be created, so you can create a variety of scenes in one position. You can understand natural movement while applying movement like this.

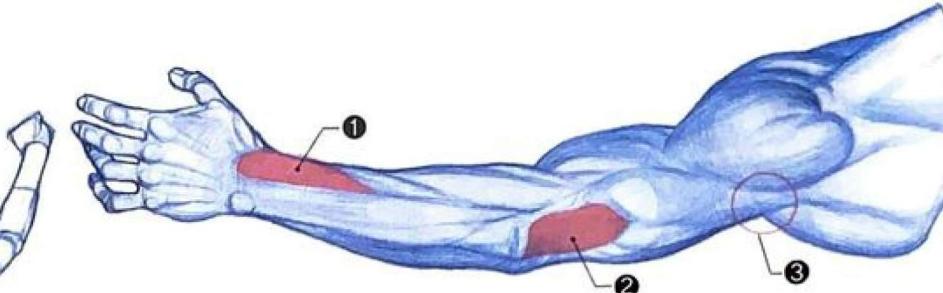
## 32 person application posture

### Combat between characters

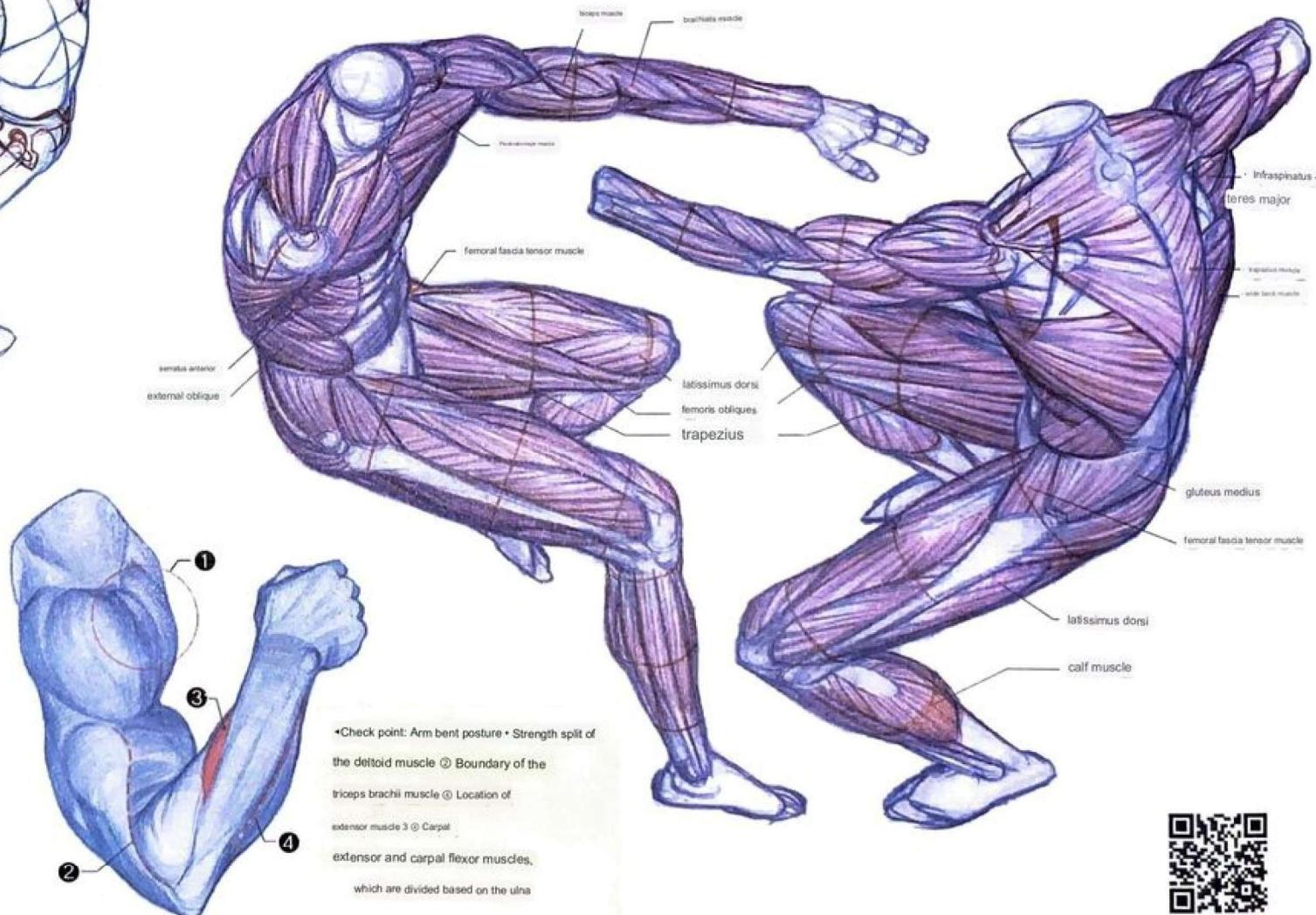


### Drawing fight scenes in the air

In illustrations, there are many cases where one person appears, but in manga, several characters usually appear in one space. If it took an hour to draw one character, drawing two characters in the same space would take more, not twice as long as it would take to draw one. This is because we have to calculate the size and perspective of the person in the same space. In addition, when the characters touch each other, more time is added due to the adjustment of the distance between the characters. In this page drawing, the character is floating in the air, so the calculation of the point of view is not necessary, but it is difficult because the characters are touching each other.

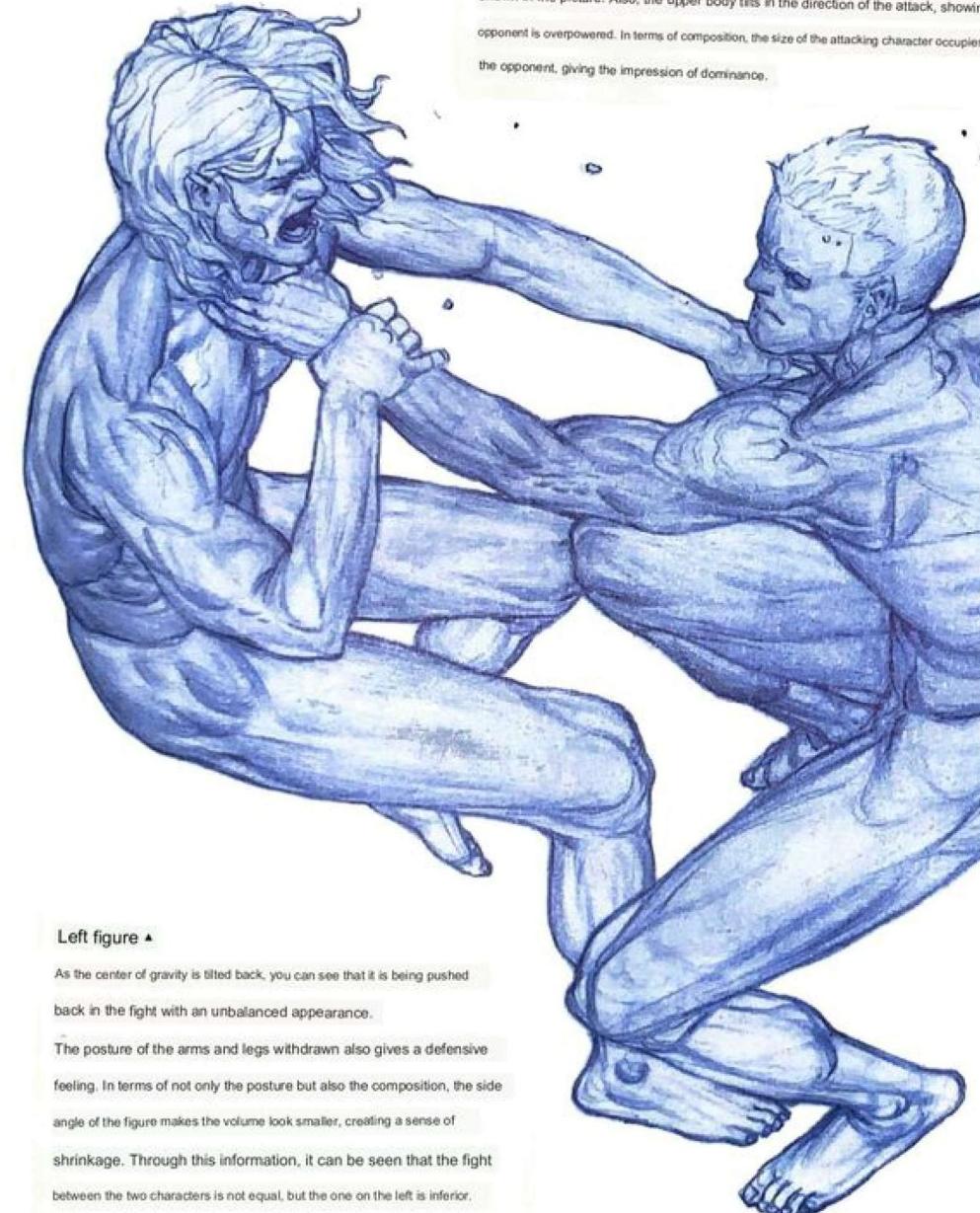


- Checkpoint: Posture with the arm stretched to the side • Flow of the abductor/extensor muscle digging between extensor muscles
- 2 and 3 © Tendon area of the triceps brachii
- Area not covered by the deltoid muscle when viewed from behind



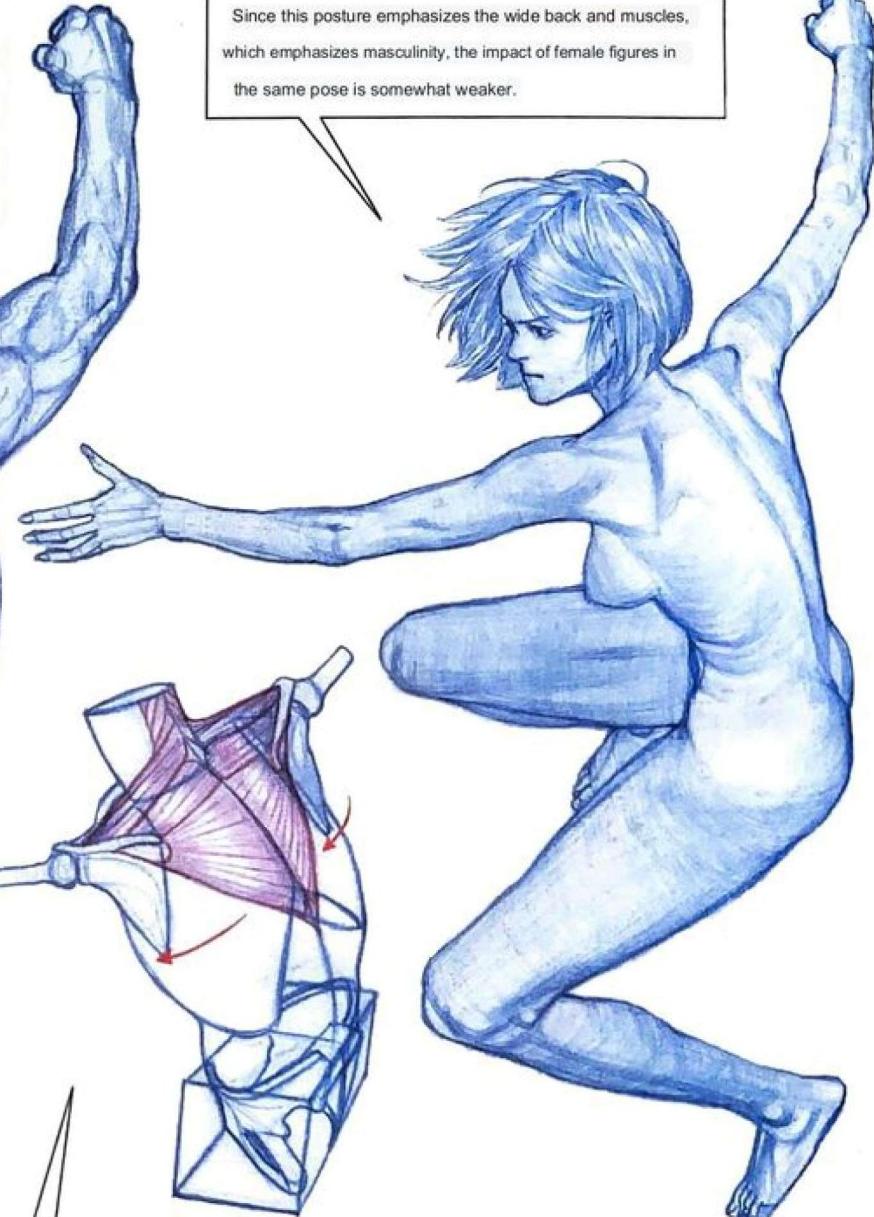
- Check point: Arm bent posture • Strength split of the deltoid muscle ② Boundary of the triceps brachii muscle ③ Location of extensor muscle 3 ④ Carpal extensor and carpal flexor muscles, which are divided based on the ulna





## Right person ▾

As the distance between the hitting point and the fist increases, the energy that can be stored in the fist when swinging the arm increases, and the angle of the wide open arm creates a threatening posture as shown in the picture. Also, the upper body tilts in the direction of the attack, showing that the opponent is overpowered. In terms of composition, the size of the attacking character occupies a larger space than the opponent, giving the impression of dominance.



Since this posture emphasizes the wide back and muscles, which emphasizes masculinity, the impact of female figures in the same pose is somewhat weaker.

## Left figure ▾

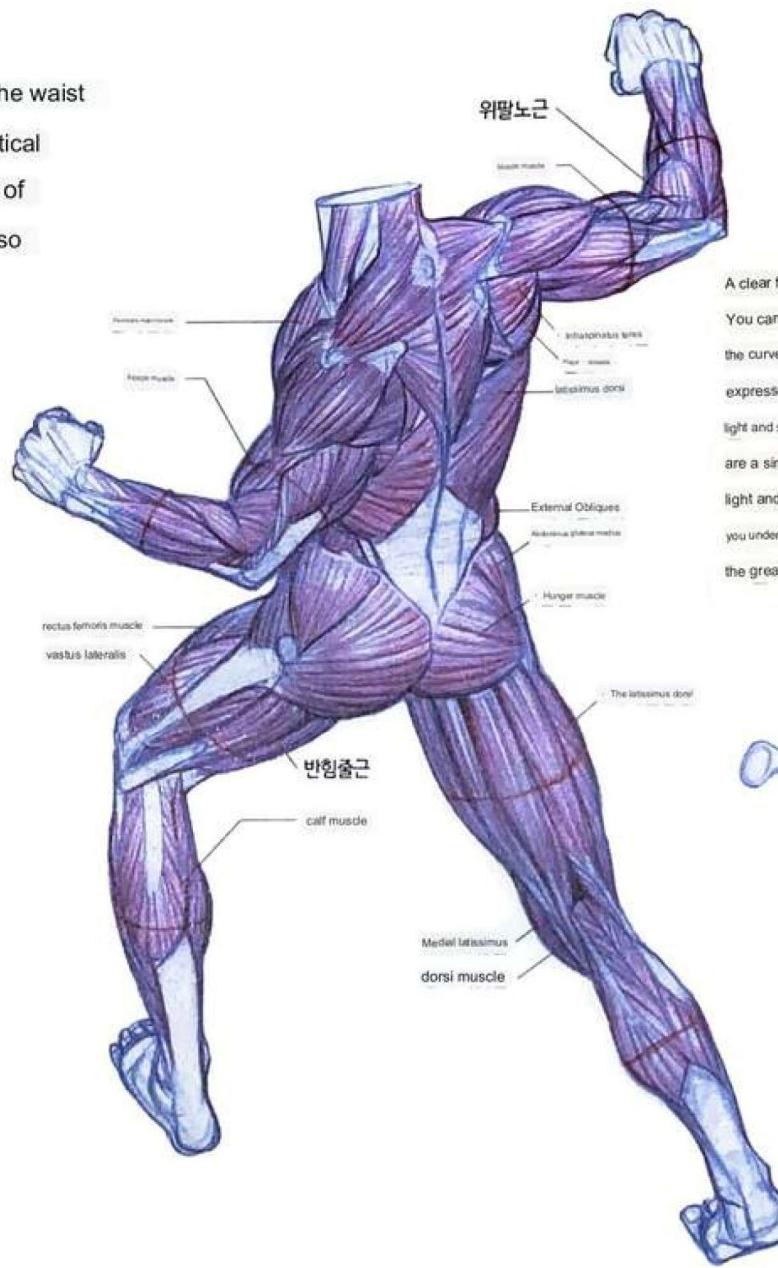
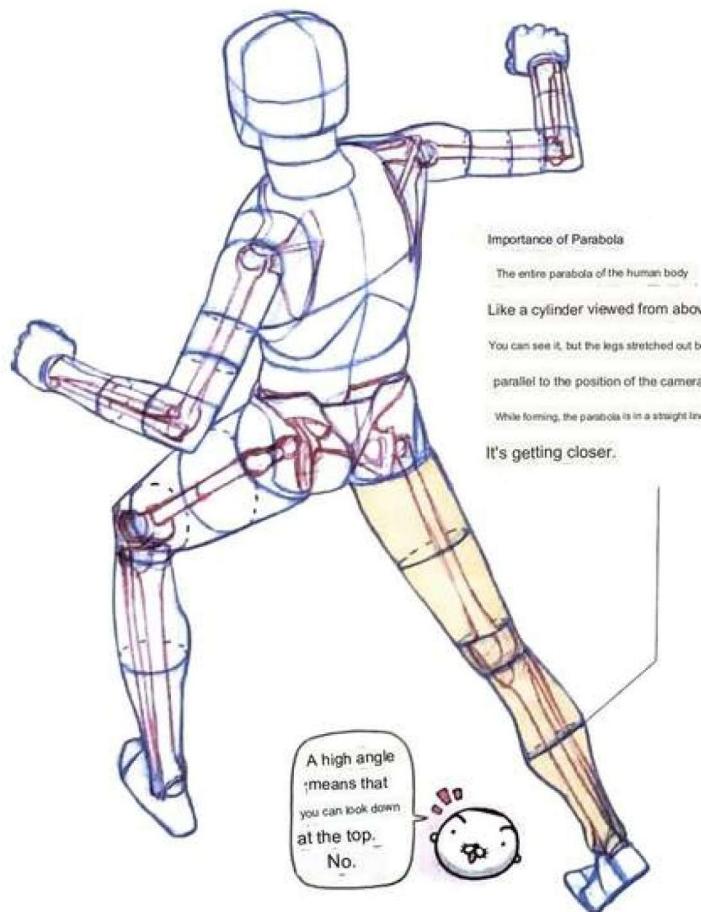
As the center of gravity is tilted back, you can see that it is being pushed back in the fight with an unbalanced appearance. The posture of the arms and legs withdrawn also gives a defensive feeling. In terms of not only the posture but also the composition, the side angle of the figure makes the volume look smaller, creating a sense of shrinkage. Through this information, it can be seen that the fight between the two characters is not equal, but the one on the left is inferior.

You can observe the position of the shoulder blade and the relaxation and contraction of the trapezius muscle according to the movement of the arm. The shoulder blade of the right arm pulled back converges to the spine, and the shoulder blade of the left arm extended forward moves away from the spine.

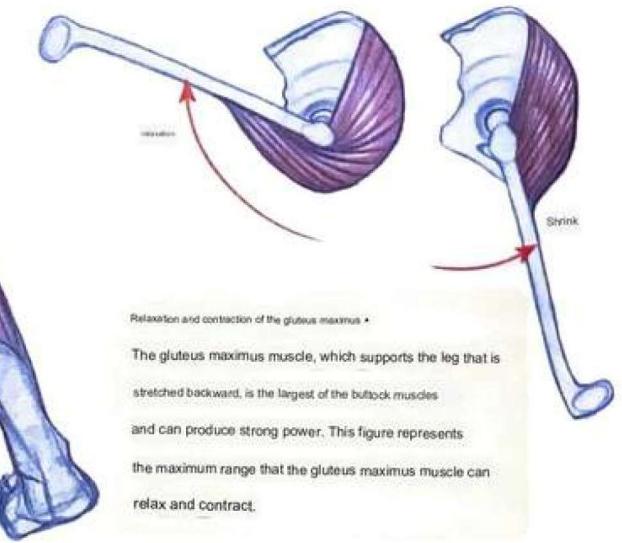
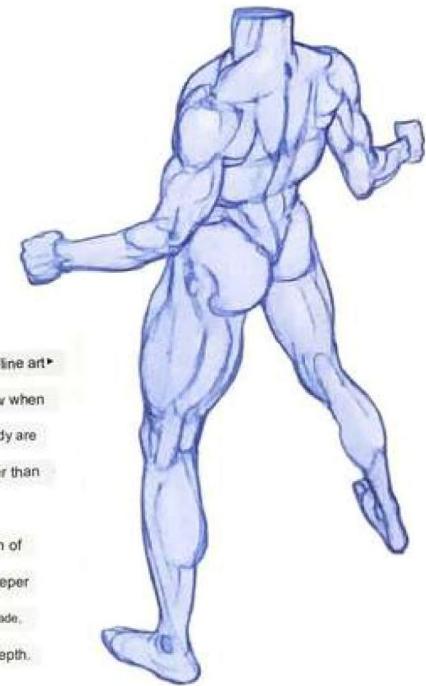
- Middle stance of hook punch

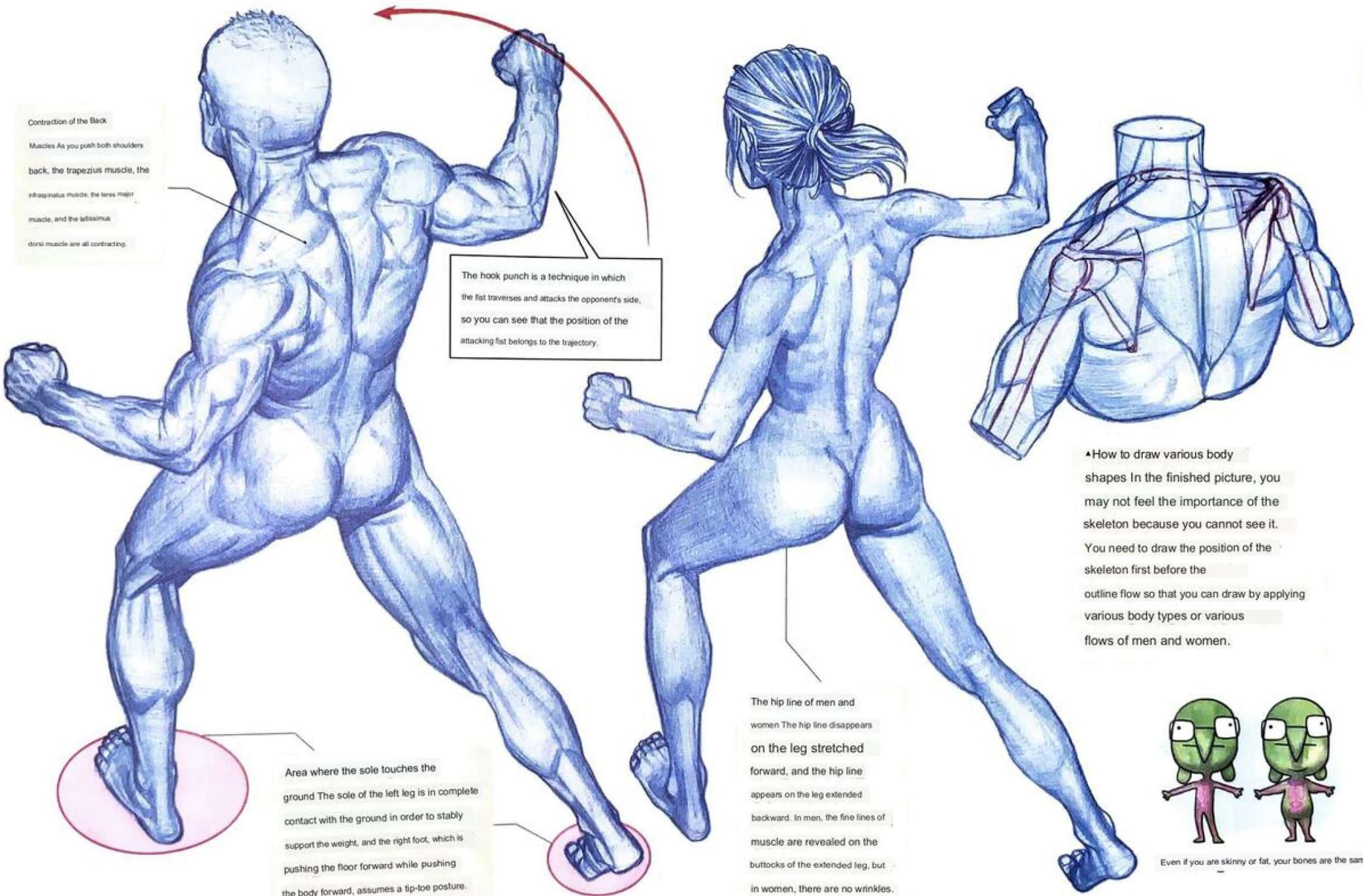
#### Characteristics of the medium posture of extending the fist

The stances on this page are in the middle of forward rotation of the waist after twisting backwards for a hook punch attack. The almost identical tilt of the shoulders and pelvis tells us that the body is in a state of rotation. The position of the angle is on the back of the character, so you can clearly feel the power of the leg pushing the ground.

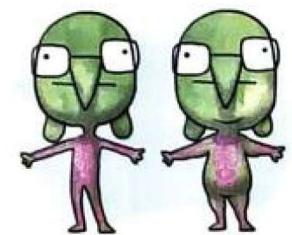


A clear flow seen through line art  
You can see a clearer flow when  
the curves of the human body are  
expressed with lines rather than  
light and shade. Lines  
are a simplified expression of  
light and shade, so the deeper  
you understand the light and shade,  
the greater the sense of depth.



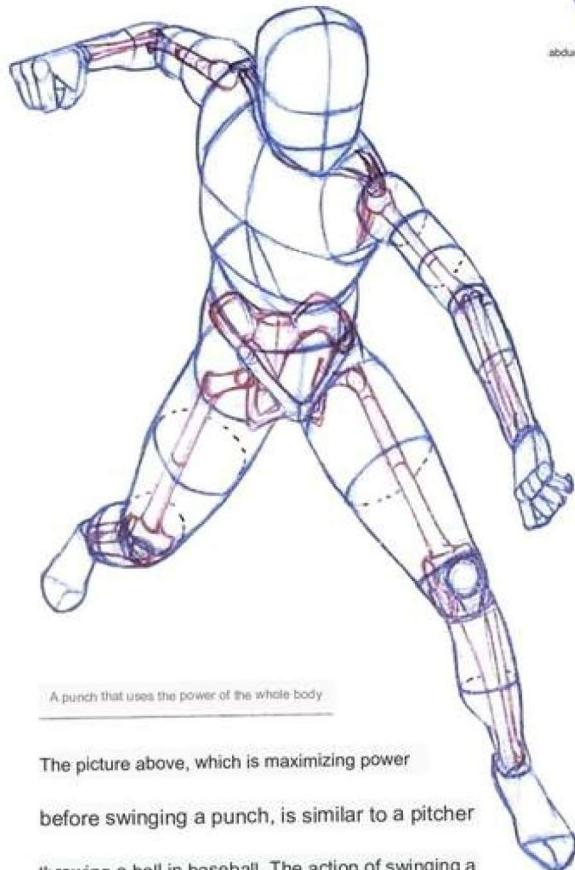


▲How to draw various body shapes In the finished picture, you may not feel the importance of the skeleton because you cannot see it. You need to draw the position of the skeleton first before the outline flow so that you can draw by applying various body types or various flows of men and women.



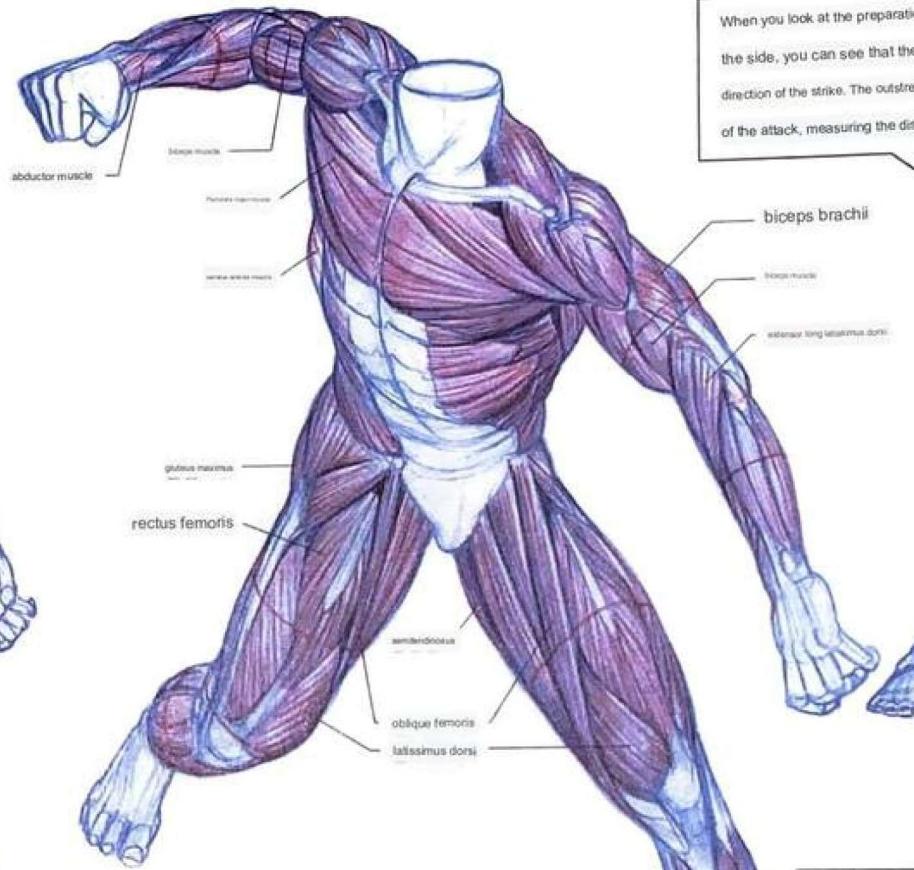
Even if you are skinny or fat, your bones are the same!

■ Straight preparation posture

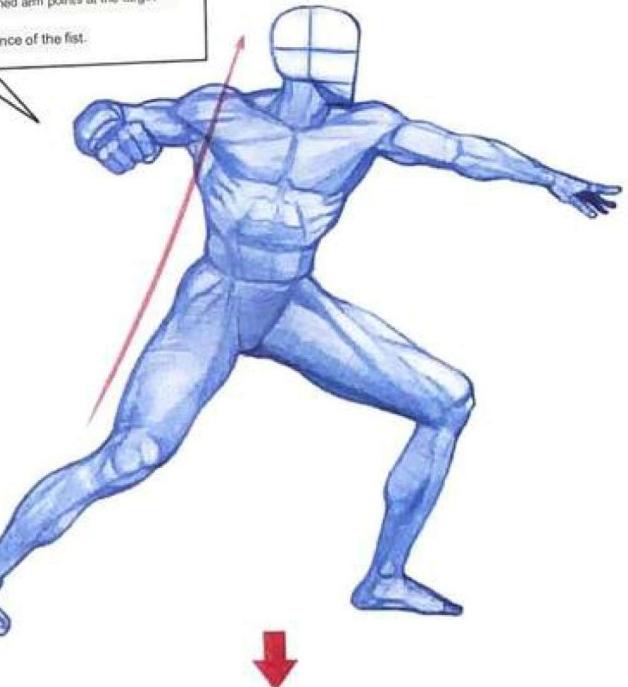


A punch that uses the power of the whole body

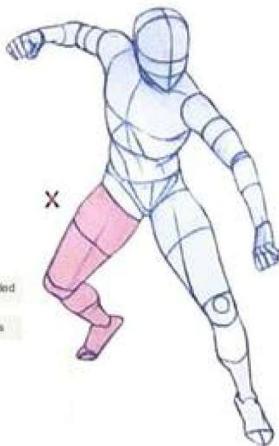
The picture above, which is maximizing power before swinging a punch, is similar to a pitcher throwing a ball in baseball. The action of swinging a punch starts with a lower body movement that pushes off the floor and combines with the rotational force of the lower back. The two energies are channeled into the arm, bringing all the energy to the end of the fist. In order to perform these movements, you need to bend your knees slightly, twist your upper body as far back as possible, and bend your arms.



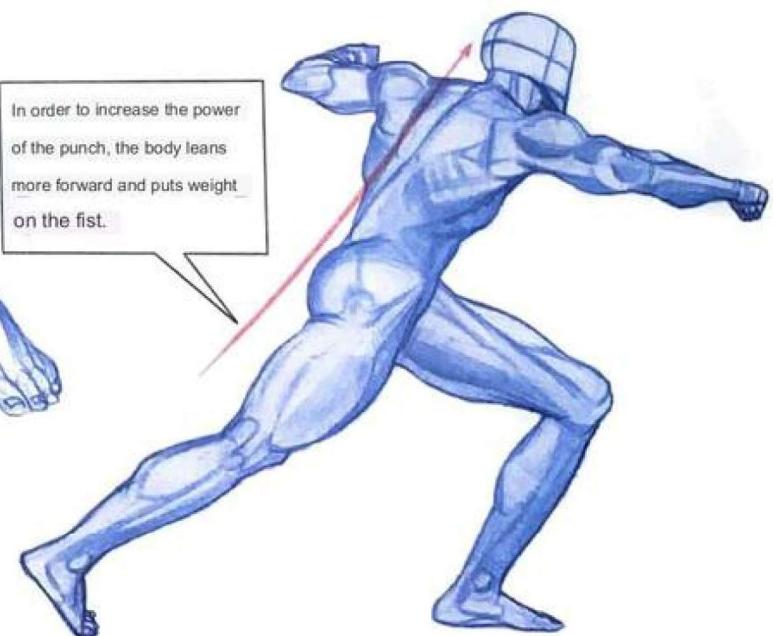
When you look at the preparation posture for a punch from the side, you can see that the upper body is tilted in the direction of the strike. The outstretched arm points at the target of the attack, measuring the distance of the fist.

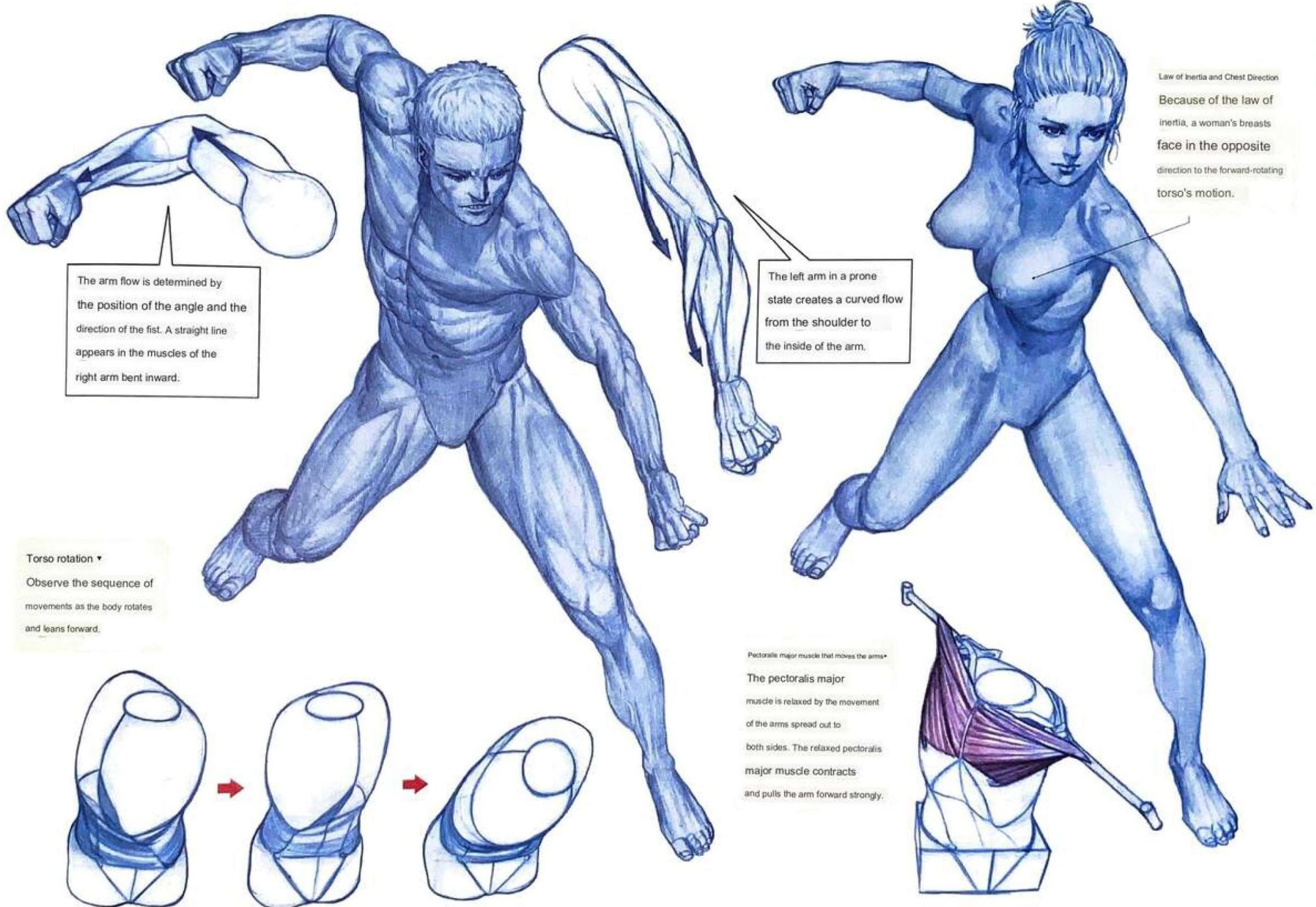


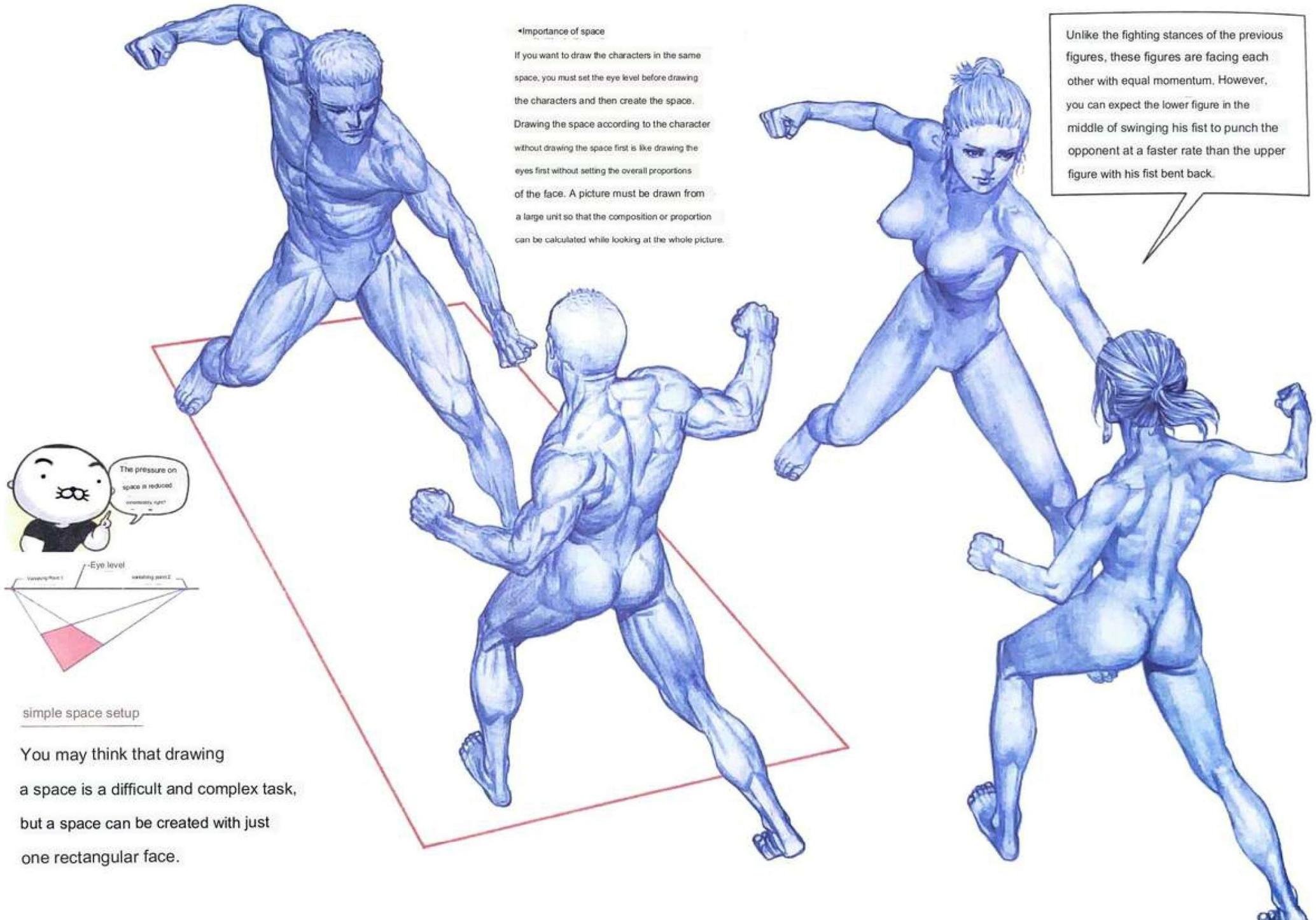
In order to increase the power of the punch, the body leans more forward and puts weight on the fist.



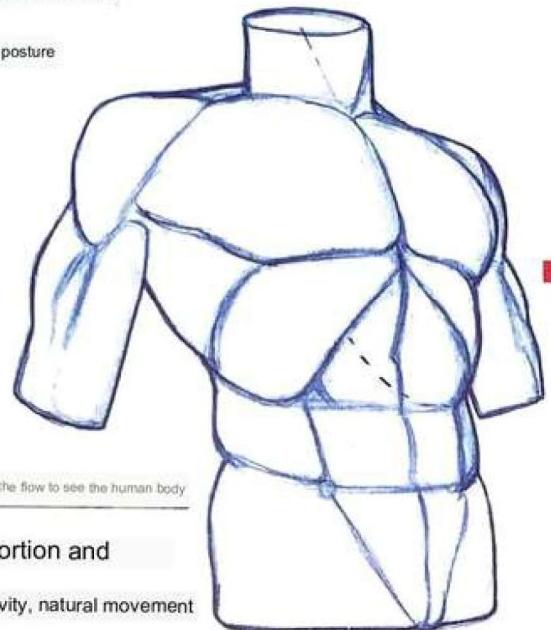
Incorrect knee direction > Because the direction in which the fist is extended and the direction in which the right knee is bent are different, the force to push the ground is not applied to the punch.







Weapon-holding posture



You need to know the flow to see the human body

Proportion and

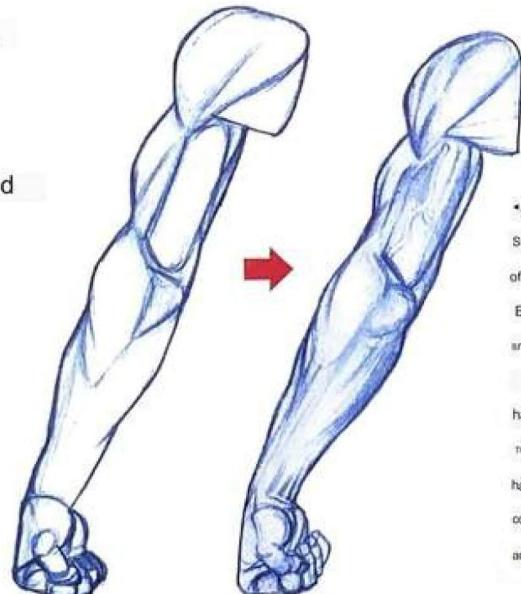
Center of gravity, natural movement

After checking, focusing on large muscles

Draw the flow as a simple line.

From the beginning, fine muscles  
rather than focusing on the form  
It's about tying up a big flow and  
simplifying it. Croquis is the  
best way to practice, and  
many students ask how  
long they should practice croquis.

Painting is a combination  
of theory and sense,  
so endless practice is  
required to maintain the sense.

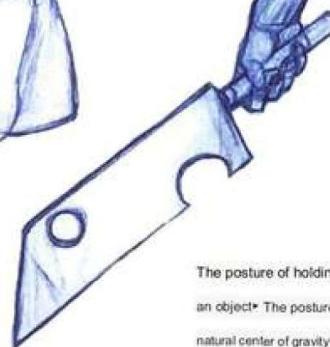


After expressing the situation to be aware  
Stable sense of proportion and volume  
of when drawing, the surface is divided into  
Even while describing a small part  
small pieces. It is important that the big flow

Best to keep checking

has not collapsed. In manual work, it  
The distance between the picture and the line of sight  
has to be maintained all the time, and in  
computer work, it has to be constantly zoomed in  
and out so that the whole picture is visible.

Drawing with a sense of  
depth The easiest way to  
give a sense of depth to the  
human body is to expose  
the flow of the  
skeleton. Among them, the  
lower line of the ribs is a  
representative example.



The posture of holding  
an object\* The posture of the  
natural center of gravity  
is created when you put your legs  
in the direction of holding the  
weapon. If you stand with a heavy  
object in one hand and stand  
with one leg, you will understand  
right away.



■ The posture of drawing a sword from its sheath

### cross-legged posture

Leg fatigue persists evenly on  
If you stand in a distributed state  
both legs. So when I'm standing, I  
usually cross my legs. When  
you step on one leg, the pelvis  
of the weighted leg rises, and in  
response, the shoulder of the same side  
lowers to balance. Along with  
the slope, the direction of the toe is also  
an important point.

Depending on the direction of the toes, the  
posture of standing on one leg is  
divided into several ways. Which  
of the following pictures is a  
natural posture with legs  
crossed? Let's take a look at each one.



Figure 1  
X

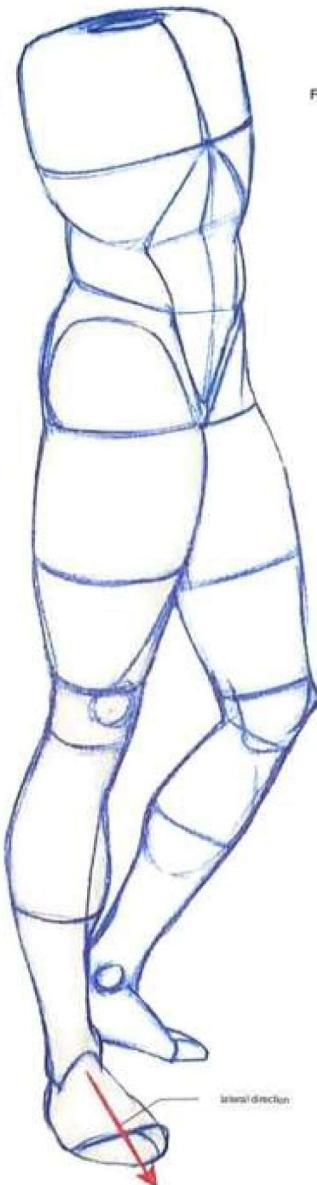


Figure 2  
O

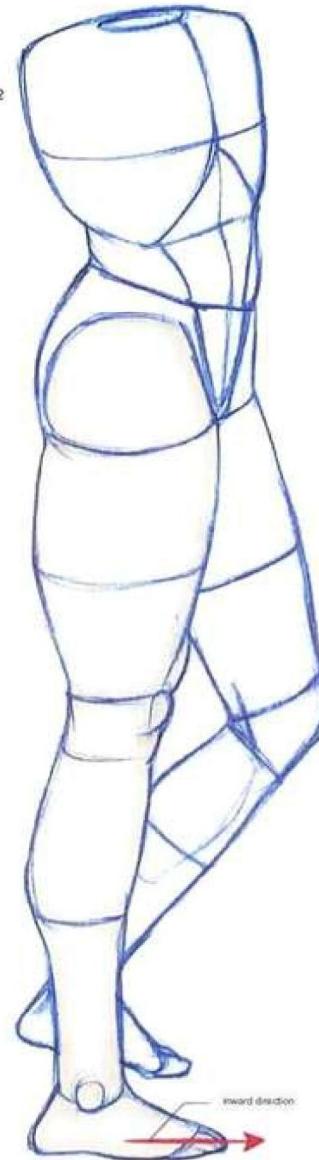


Figure 3  
O

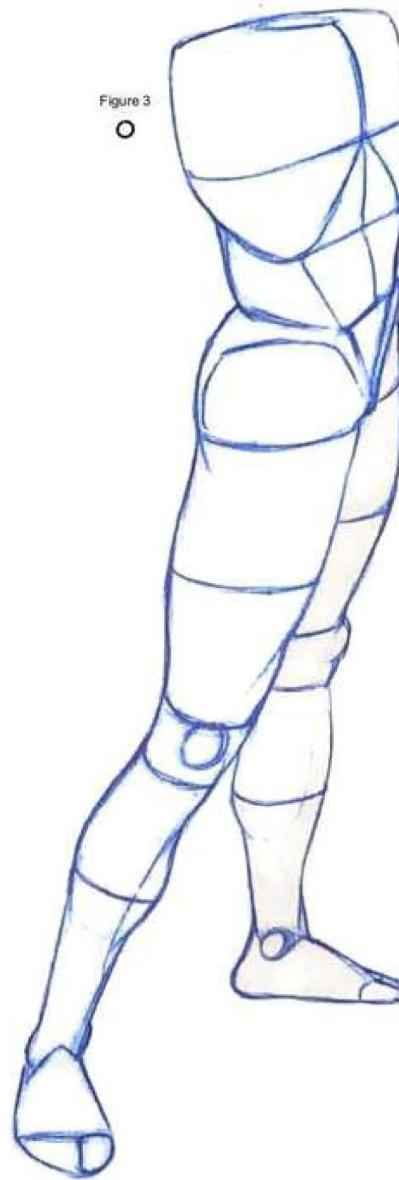
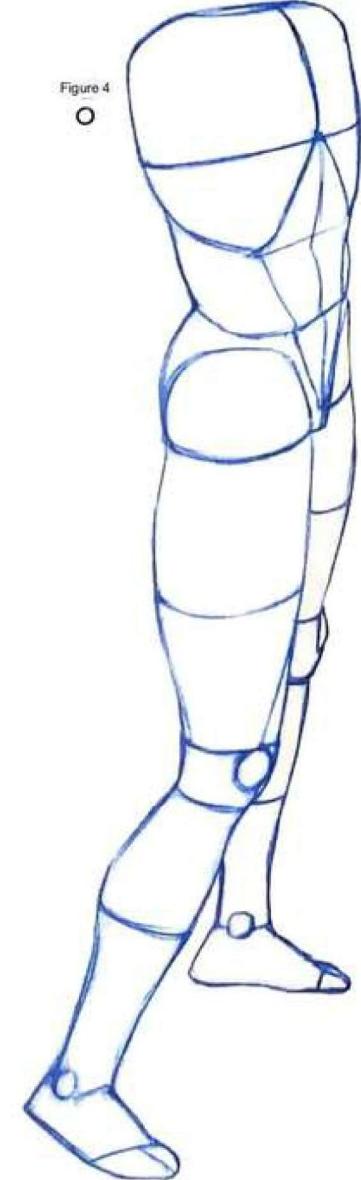
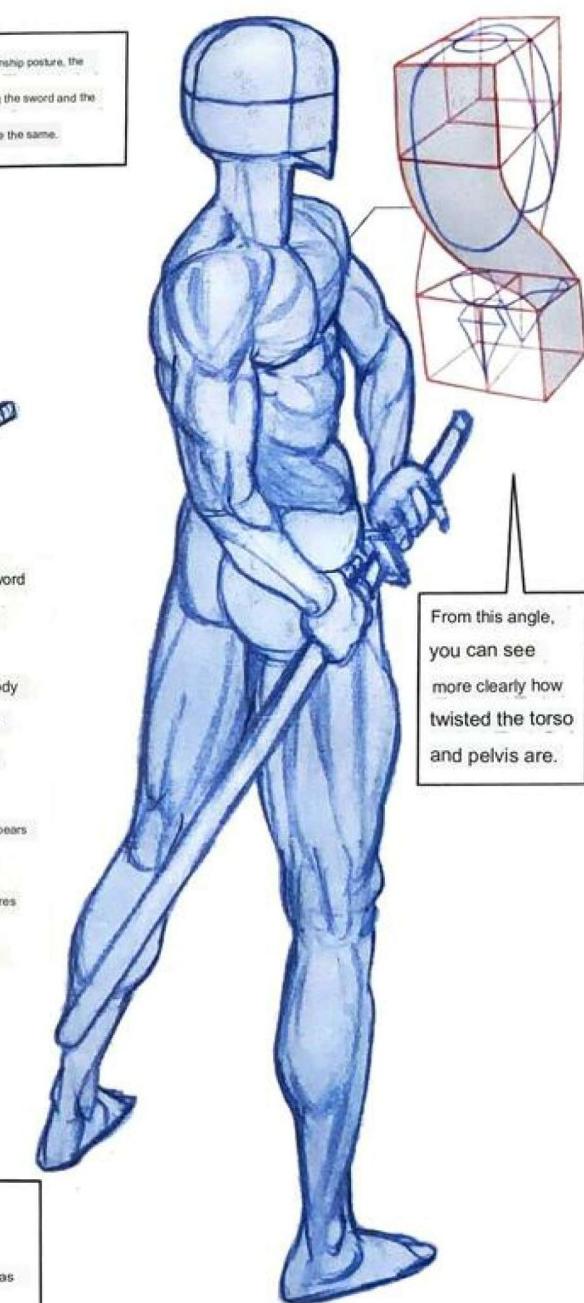
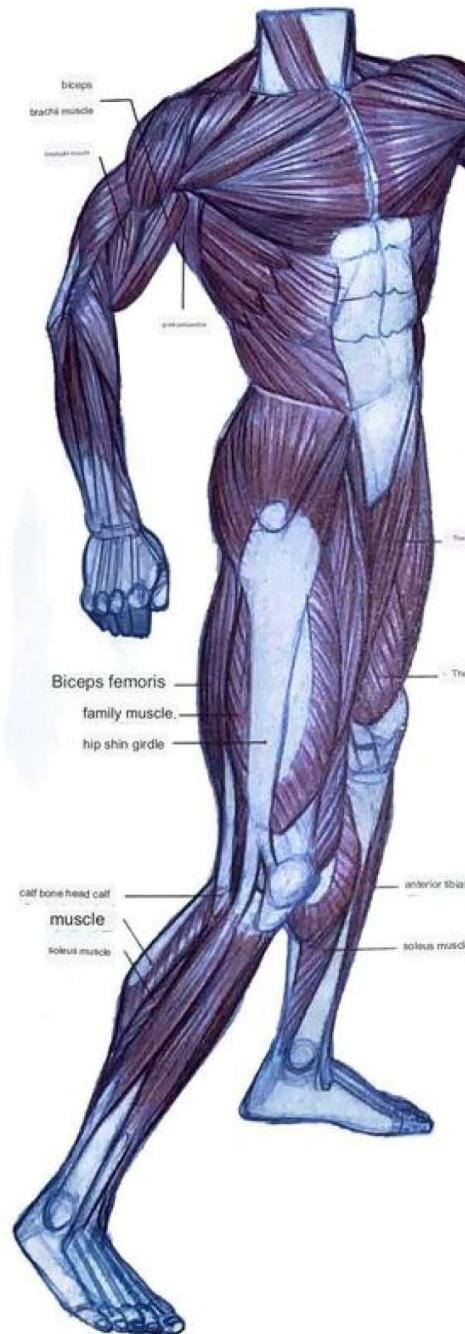


Figure 4  
O



As shown in Figure 1, if the direction of the tip of the toe on the side of the weight is facing the side, the knee is not fixed and bends. As shown in Figure 2, the direction of the toe should be facing inward so that the knee joint can support the weight stably without bending without straining the leg.

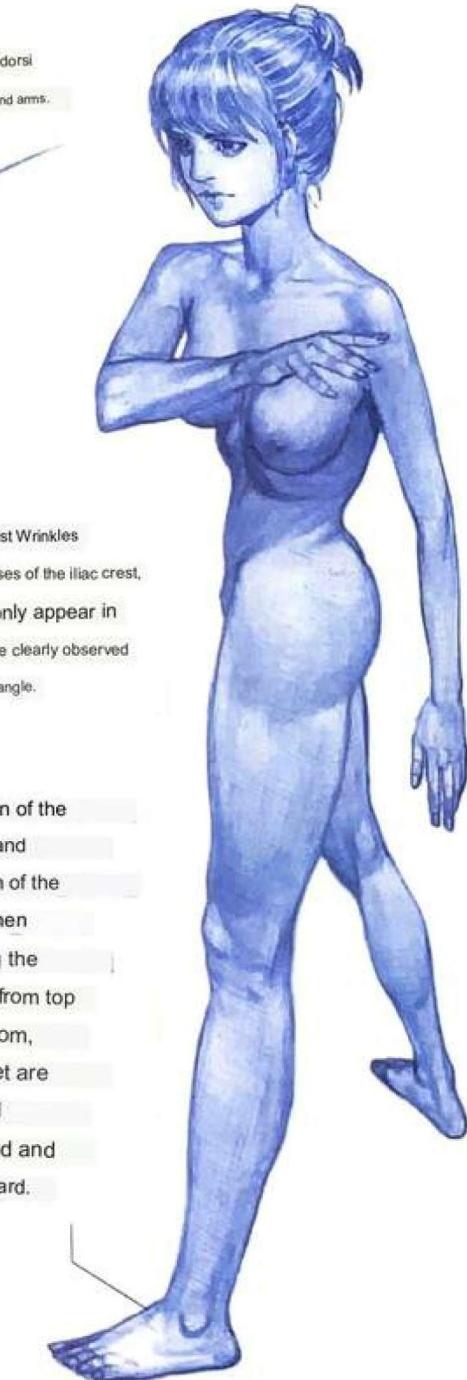
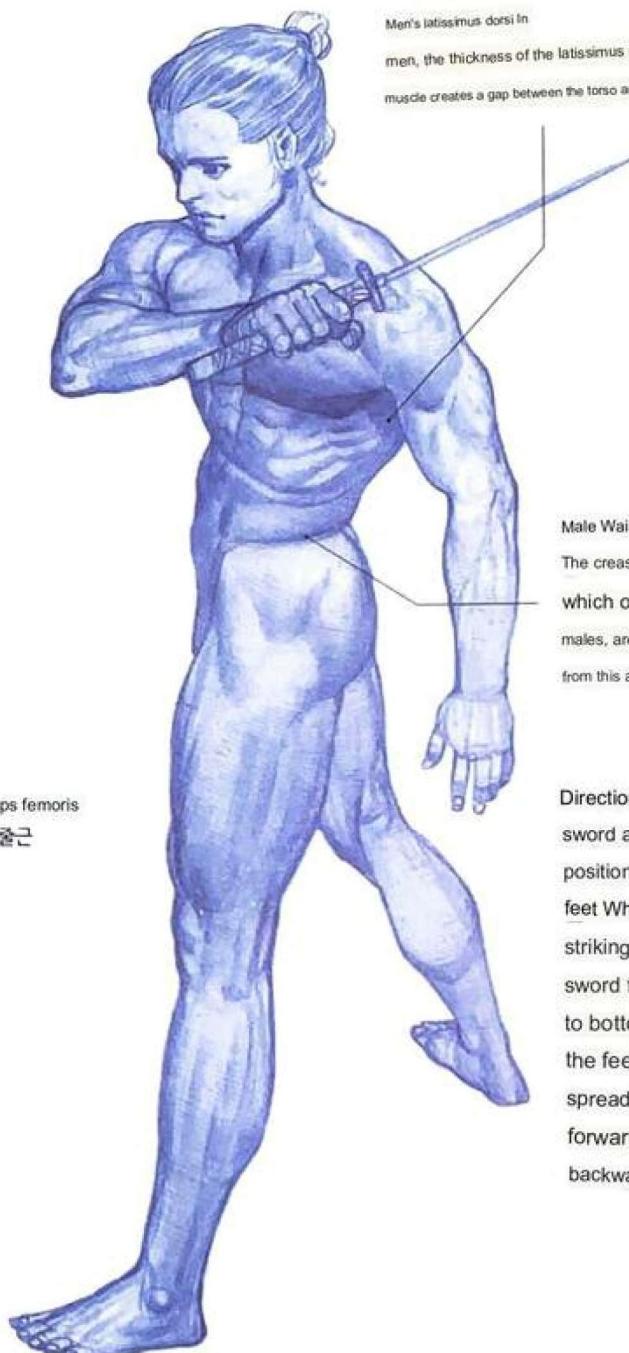
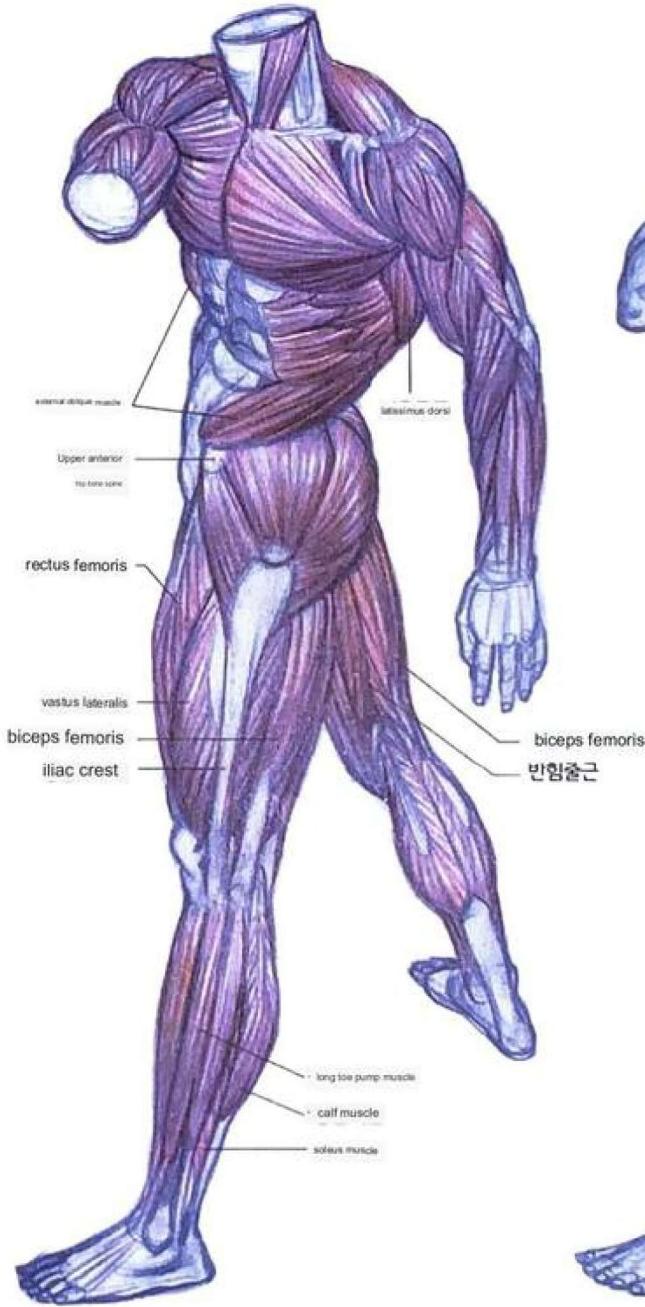
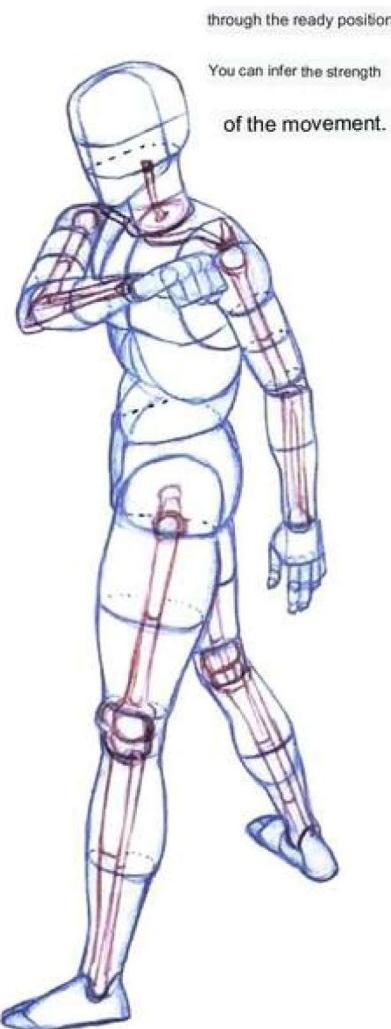
If the foot on the weighted side is facing inward, the foot on the unweighted side is not significantly affected by the angle. The important thing is that the toe on which you are carrying the weight should be pointing inward. The posture on the right page is the same as Figure 4.

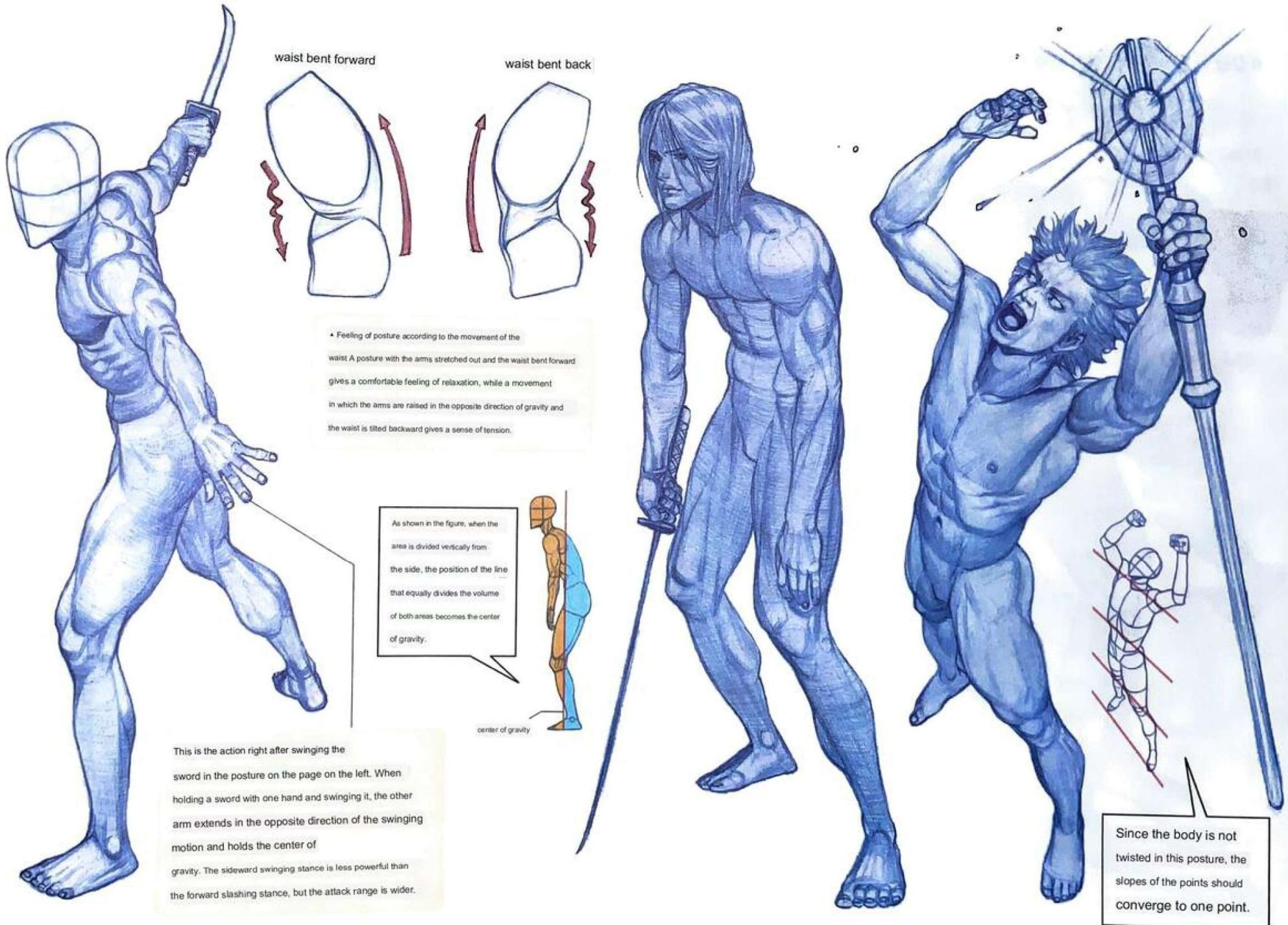


■ Holding a sword with one hand

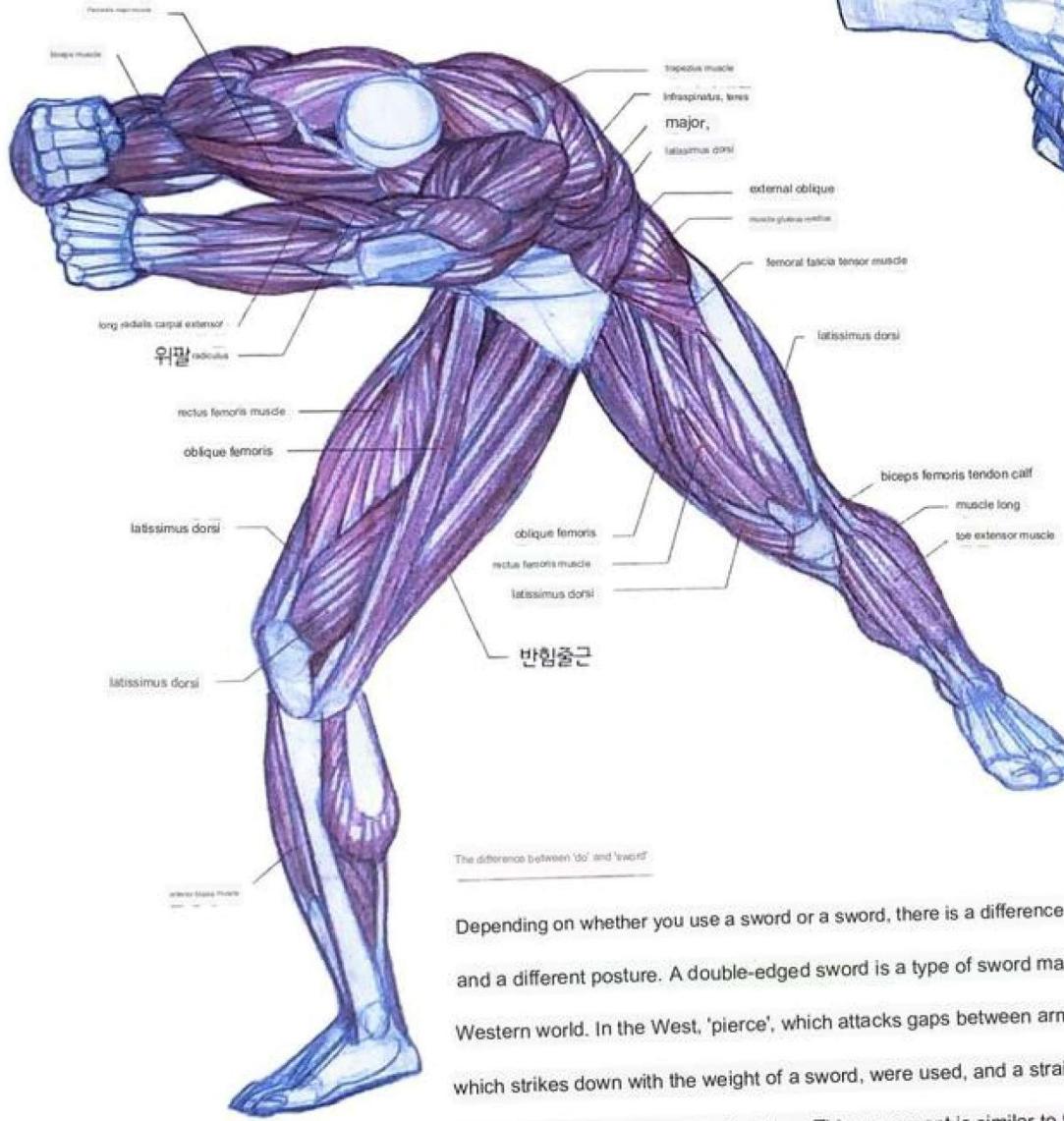
Stance of swinging the sword lightly

If you look at the state where the body's inclination is not greatly diverged and the knees are not bent, you can see that it is a posture to swing the sword lightly. Next up the intensity



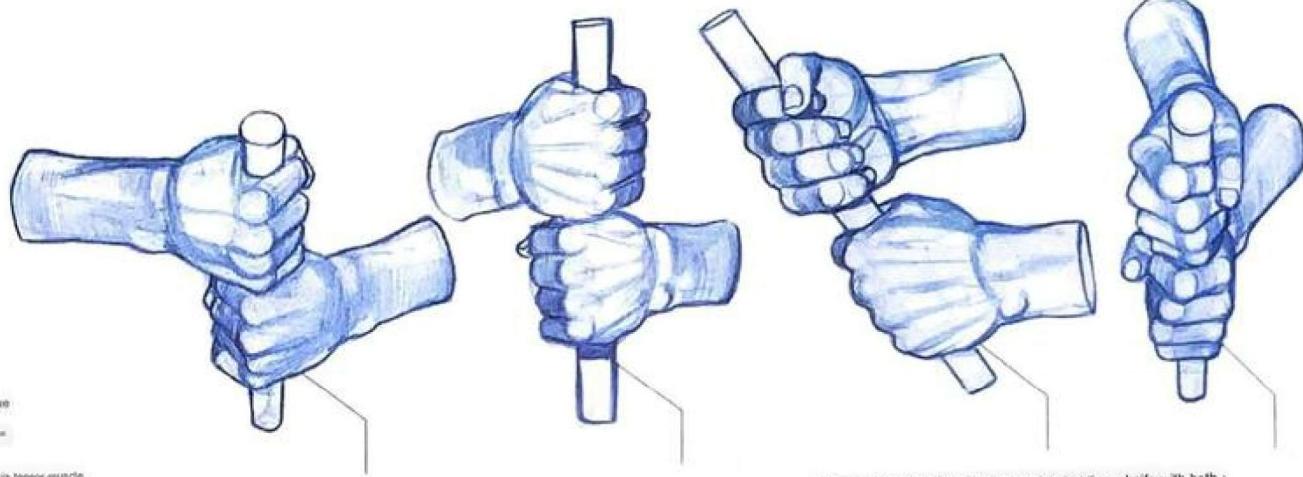


■ A posture in which the knife is held close to the body



The difference between 'do' and 'sword'

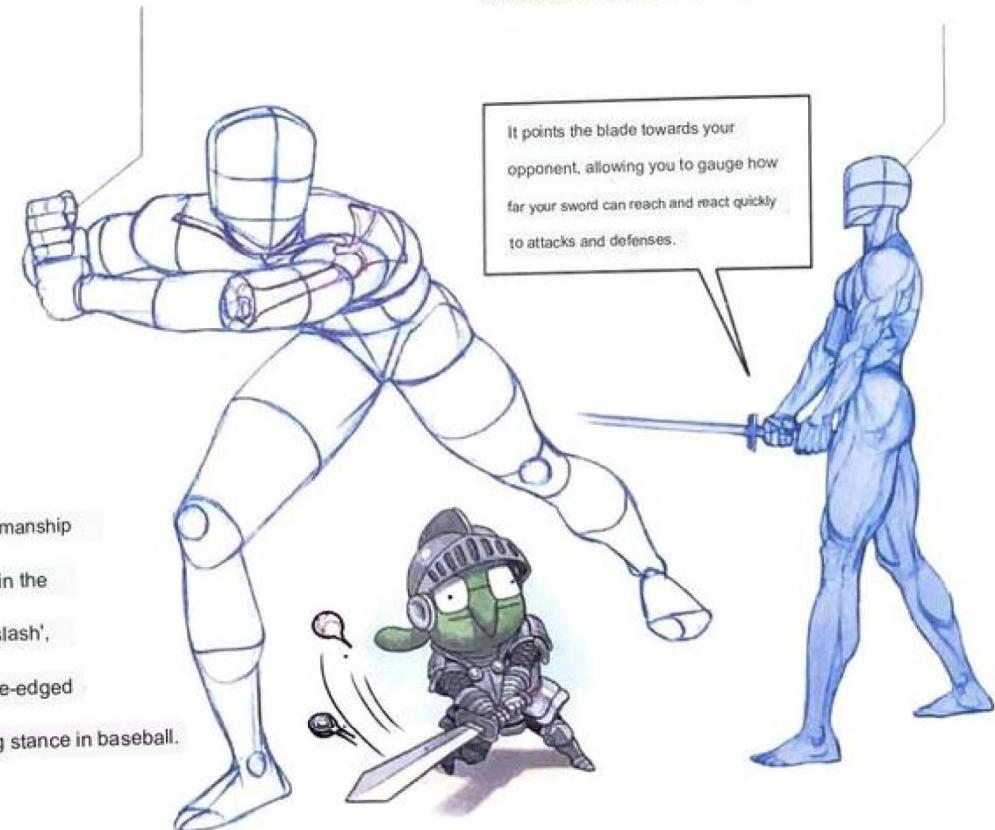
Depending on whether you use a sword or a sword, there is a difference in swordsmanship and a different posture. A double-edged sword is a type of sword mainly used in the Western world. In the West, 'pierce', which attacks gaps between armor, and 'slash', which strikes down with the weight of a sword, were used, and a straight double-edged form was used to enable both functions. This movement is similar to the batting stance in baseball.

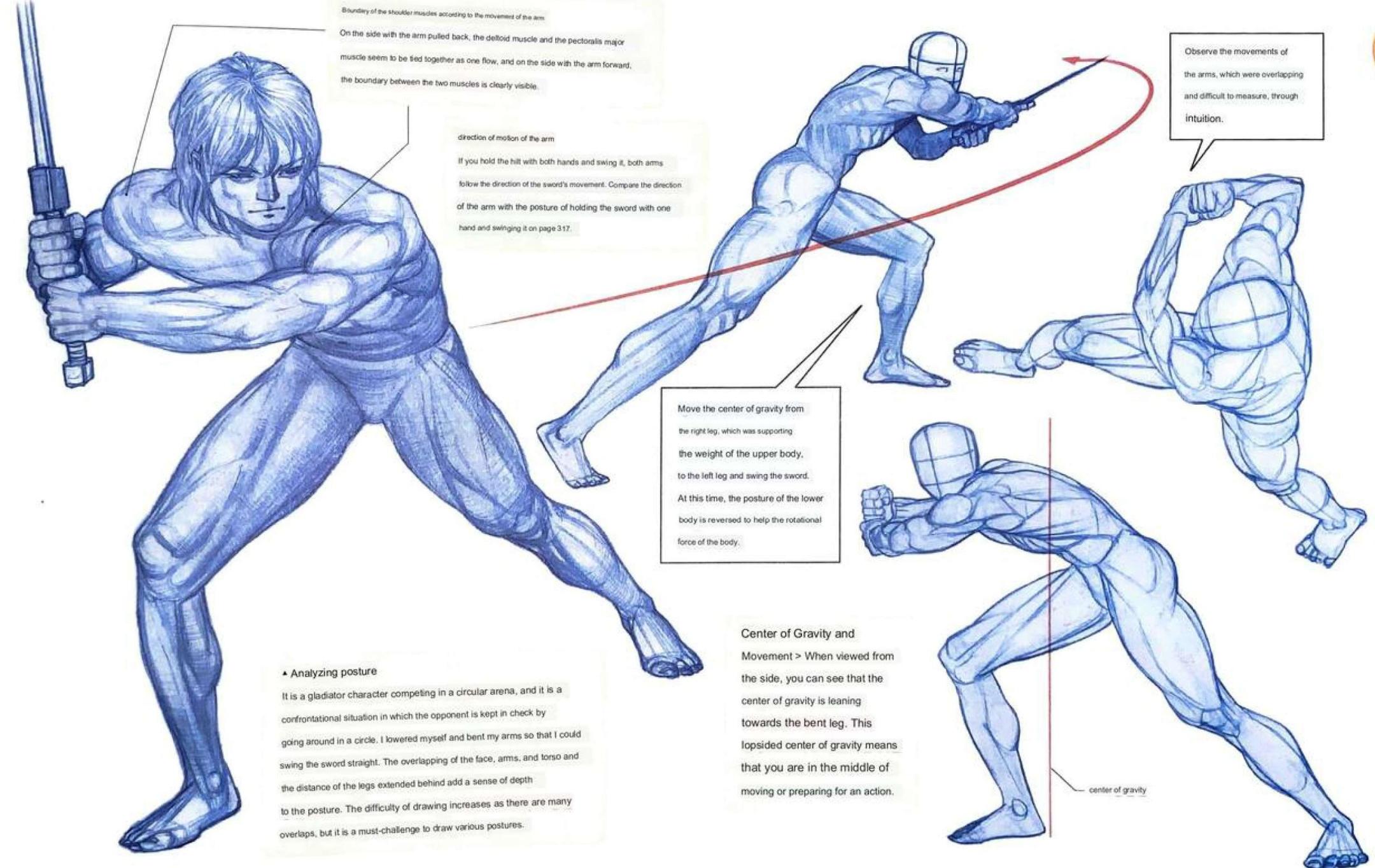


The posture of the hand holding the knife close to the body

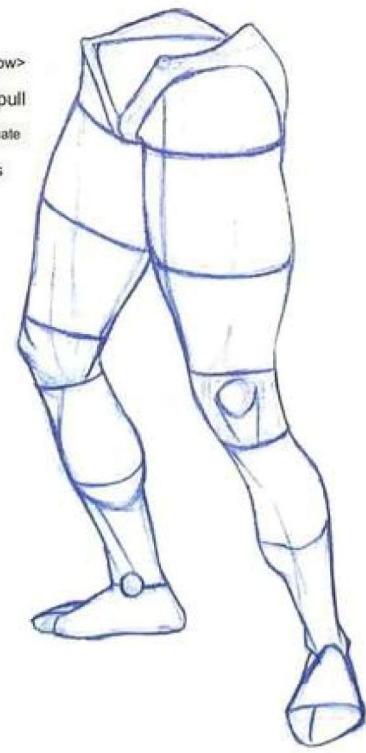
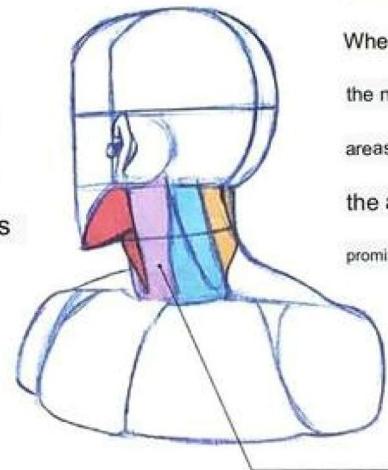
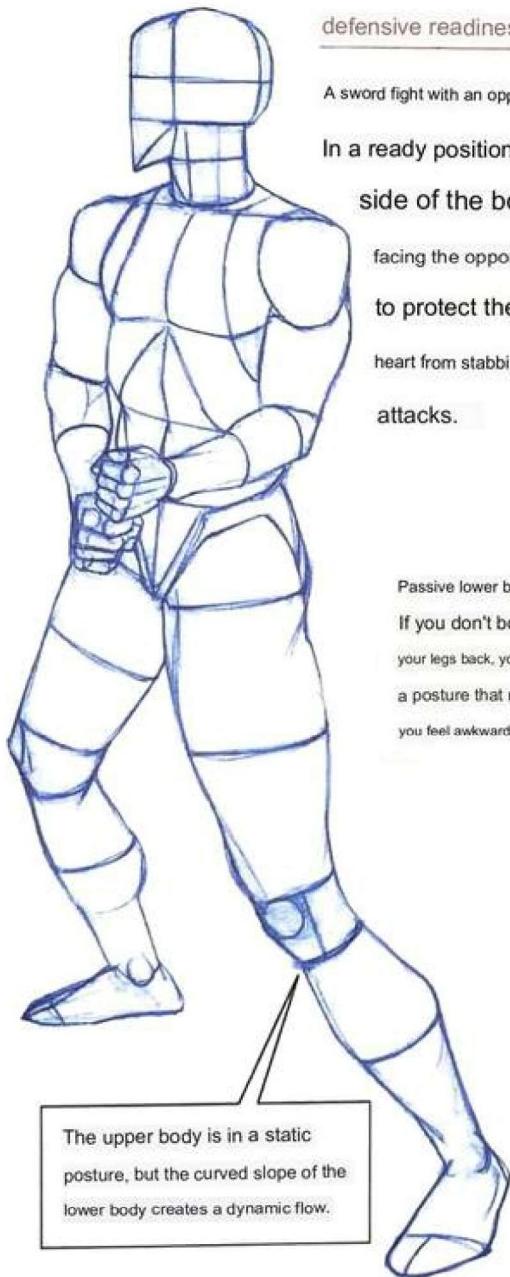
As in the pose on this page, the sword is held upright by bending the arm and holding the sword close to the body.

The most common hand gesture when holding a knife with both hands. This is a hand gesture made when aiming a knife at an opponent with the arm stretched out and the knife away from the body. The angle at which the wrists cross is narrow, and the tip of the knife faces the front.





■ Gladiator preparation posture



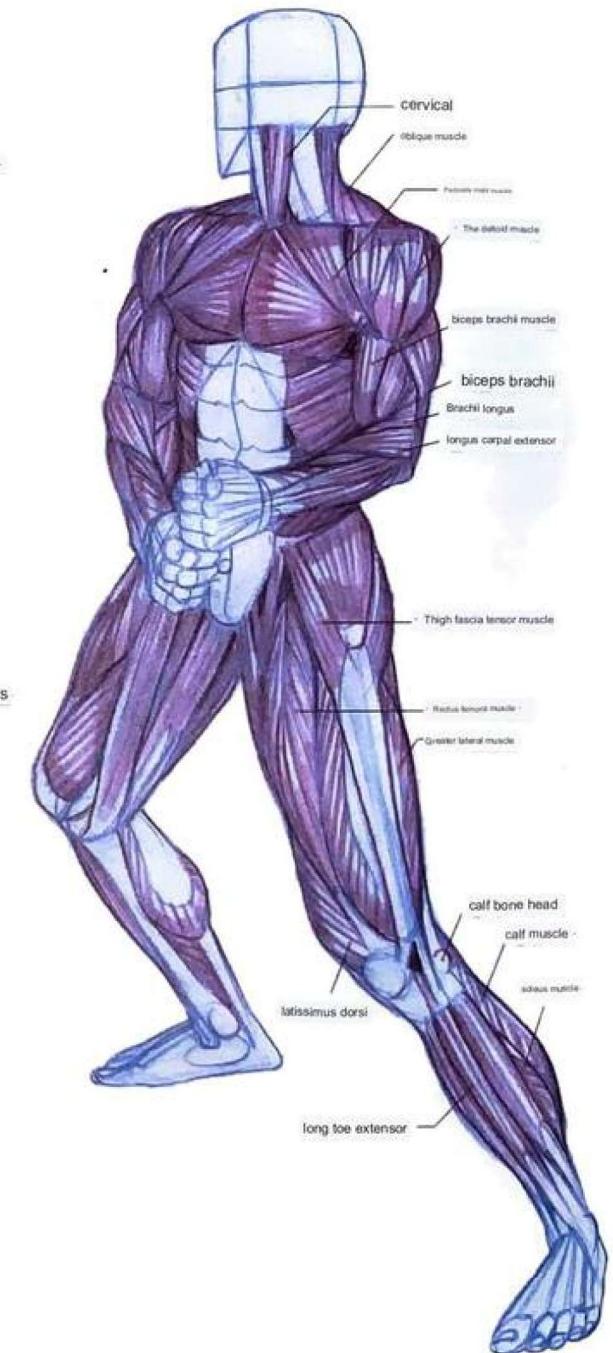
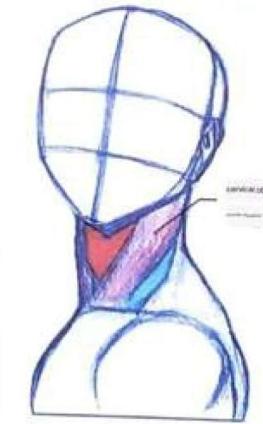
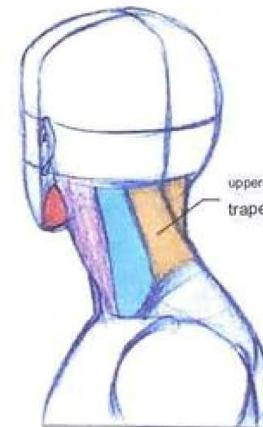
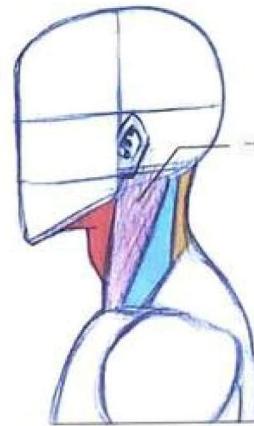
segmentation of the neck

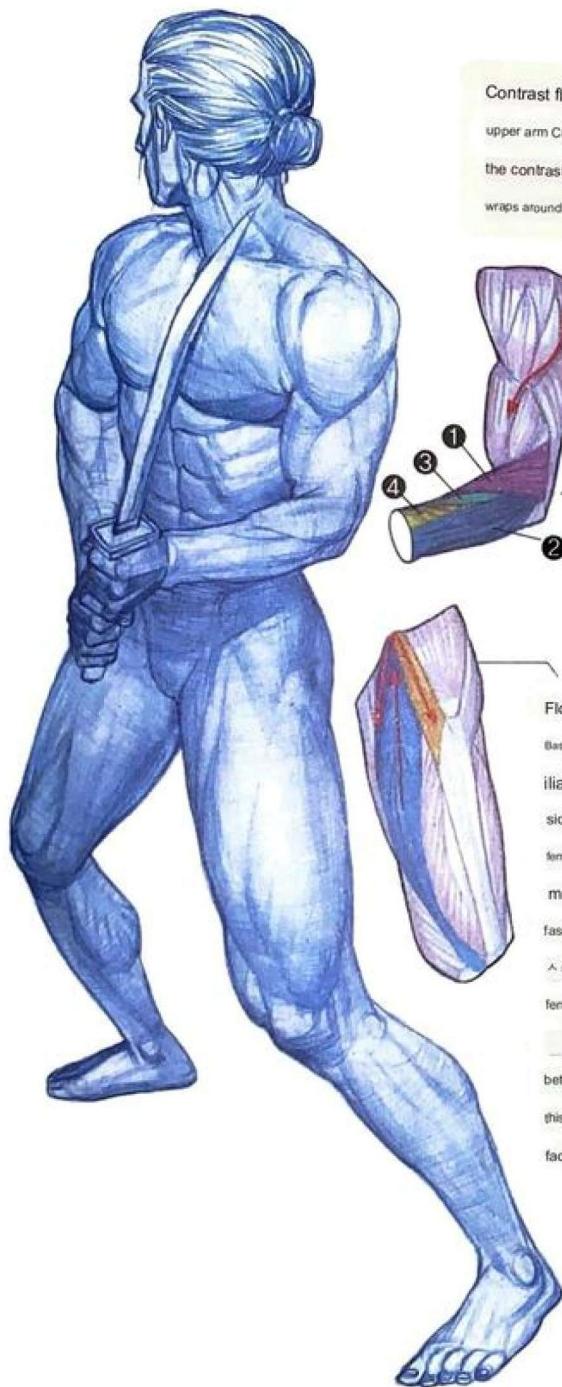
When viewed from the side, the neck is divided into four areas. Observe and classify the area based on the most prominent cervical oblique muscle.

Contraction of the oblique muscle When the left oblique muscle contracts, the head turns to the right.

Change of area (1)►  
The blue area between the cervical oblique muscle and the upper trapezius muscle widens and narrows depending on the direction the head is turned, and the blue area is widest in this position. The upper trapezius is attached to the lower part of the back of the head, so as much as the back of the head is visible, the upper trapezius is also visible.

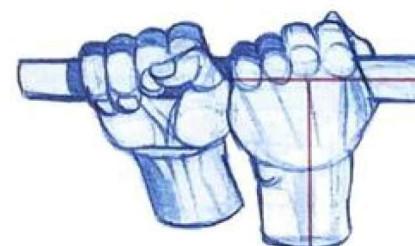
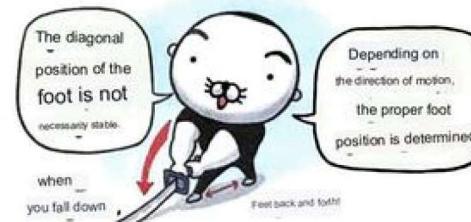
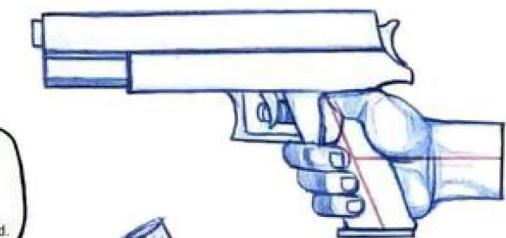
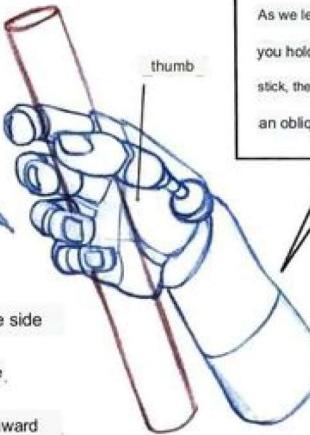
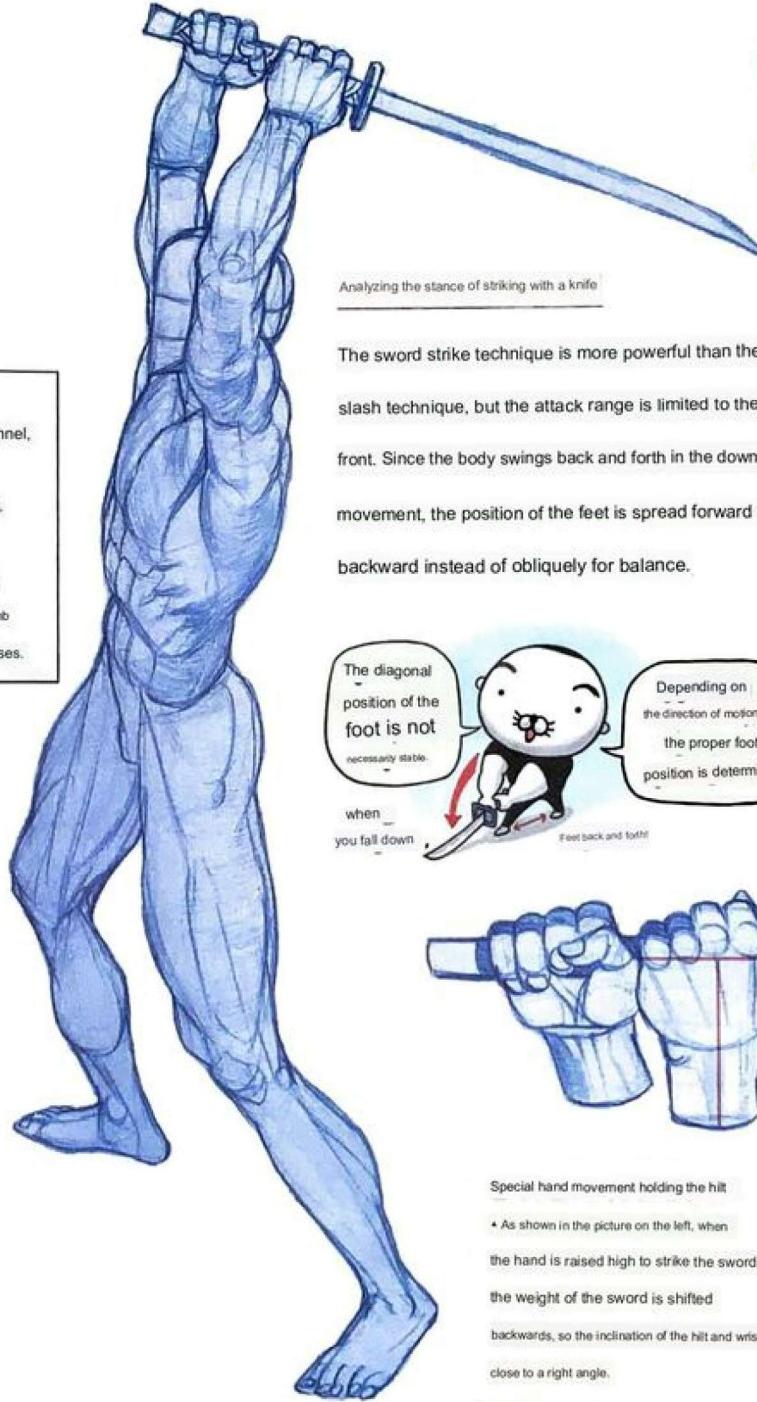
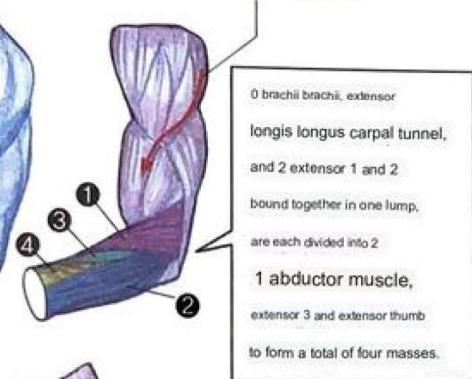
Change of area (2)►  
If you turn your head like this, the blue area looks the narrowest \*, but the blue area on the other side of the neck widens. The back of the head is not visible, so the upper trapezius is also not visible back.





### Contrast flow of the upper arm

Creates a flow as if the contrast of the deltoid muscle wraps around the biceps brachii muscle.



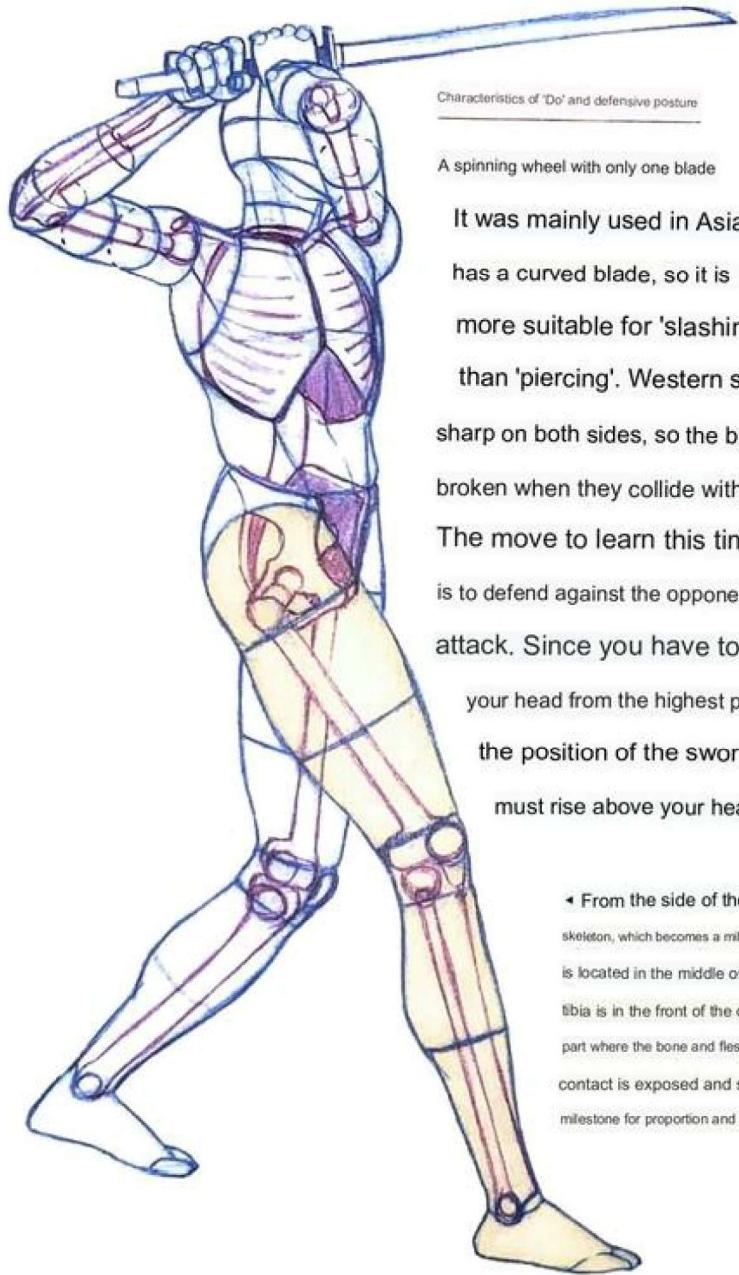
### Special hand movement holding the hilt

As shown in the picture on the left, when the hand is raised high to strike the sword, the weight of the sword is shifted backwards, so the inclination of the hilt and wrist is close to a right angle.

General hand gestures holding the hilt

As shown in the left page, the hand gestures when aiming the sword forward meet the hilt and the inclination of the wrist obliquely. A similar case could be the shape of a hand pointing a gun.

■ slam defense stance



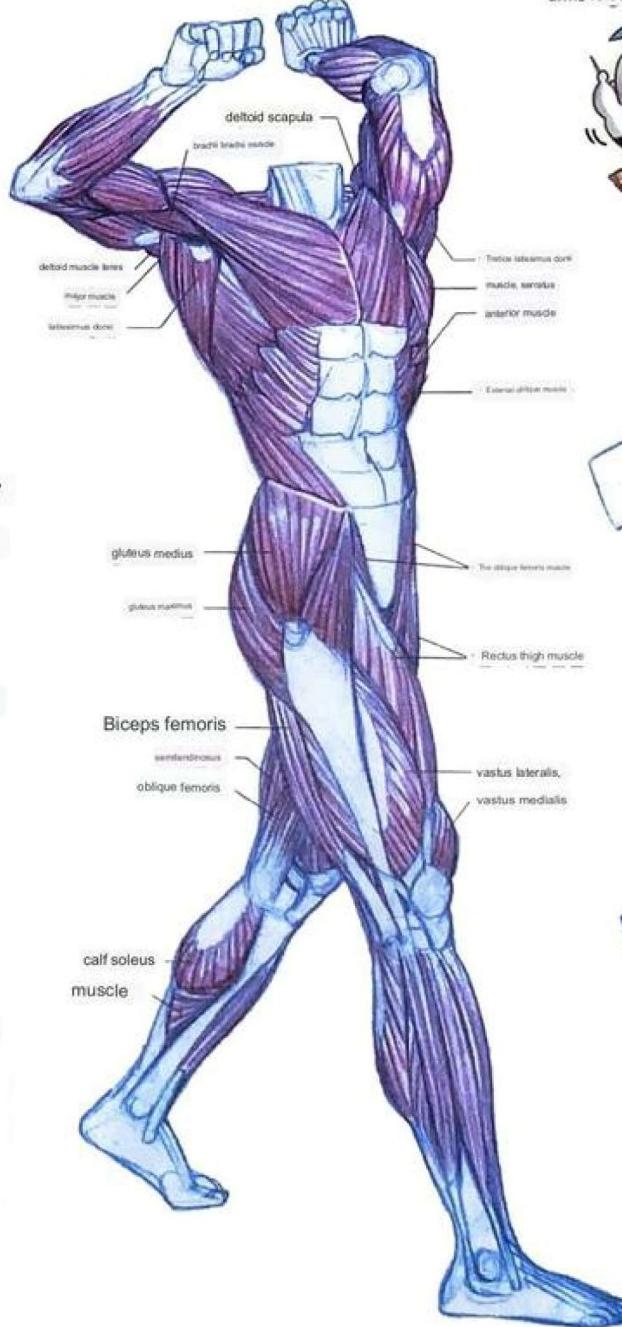
Characteristics of 'Do' and defensive posture

A spinning wheel with only one blade

It was mainly used in Asia and has a curved blade, so it is more suitable for 'slashing' than 'piercing'. Western swords are sharp on both sides, so the blade is easily broken when they collide with each other.

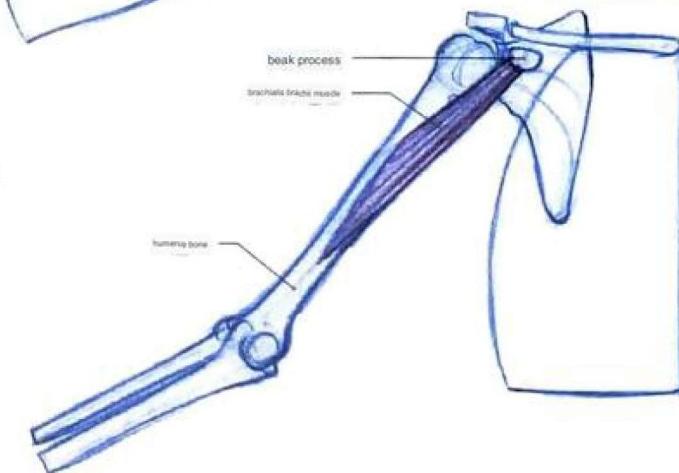
The move to learn this time is to defend against the opponent's slashing attack. Since you have to defend your head from the highest position, the position of the sword must rise above your head.

From the side of the skeleton, which becomes a milestone, the femur is located in the middle of the thigh and the tibia is in the front of the calf. The part where the bone and flesh are in close contact is exposed and serves as a milestone for proportion and muscle positioning.



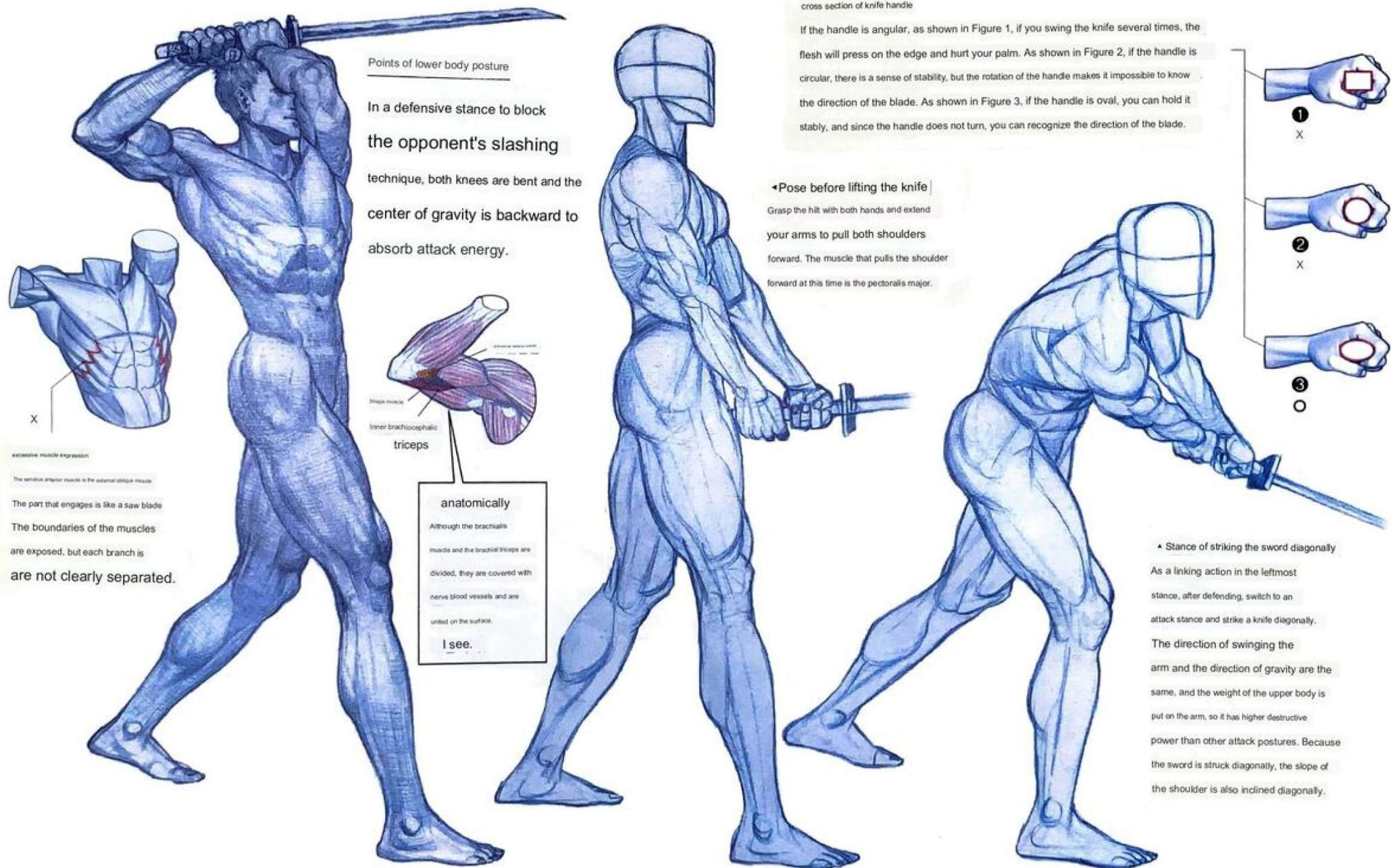
□ Checkpoint with

arms raised!

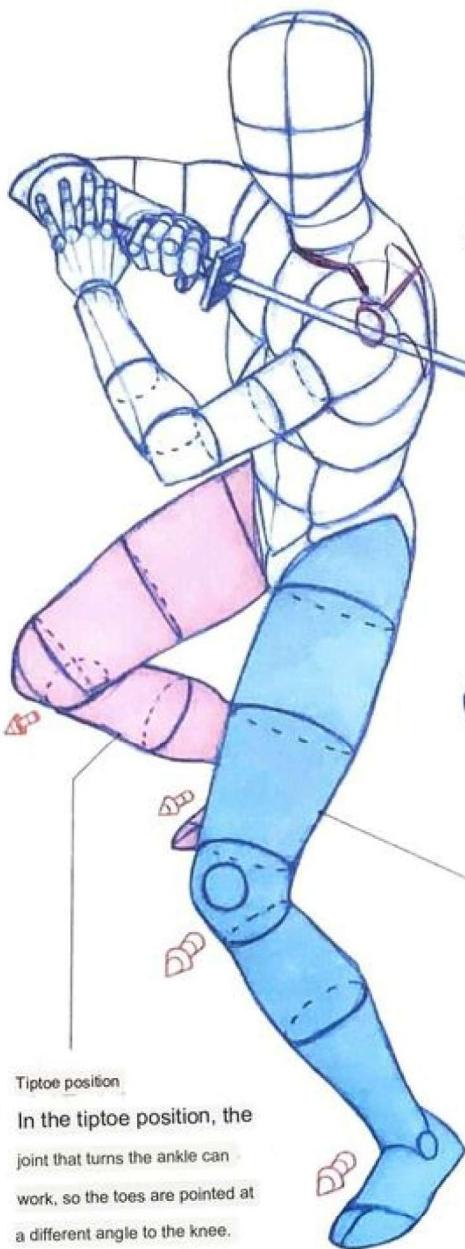


Bracers ▲

Lifting the arm reveals the shape of the biceps brachii muscle. It is the muscle that becomes the point when drawing the inner side of the arm, which is unfamiliar to the shape because there are not many opportunities to see it. The brachialis muscle originates from the beak process and attaches to the humerus bone. The deltoid muscle and the pectoralis major muscle. Most of it is covered by the biceps brachii muscle, leaving only a pointed triangular shape on the outside. The brachialis muscle assists the pectoralis major muscle to bring the arm inward.

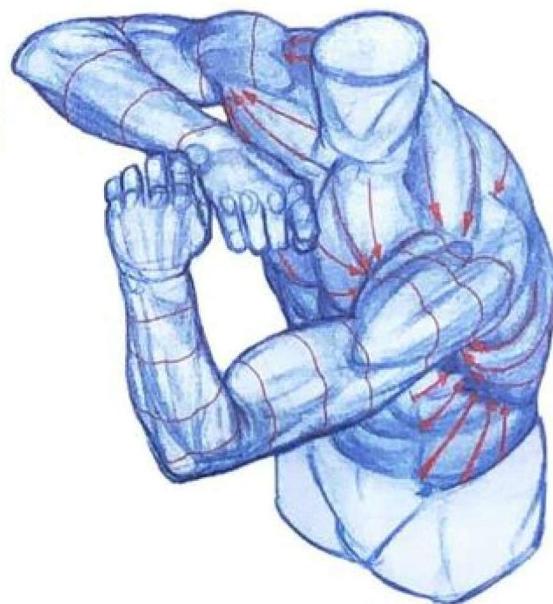


■ Stance in a surrounded situation



preparedness according to the situation

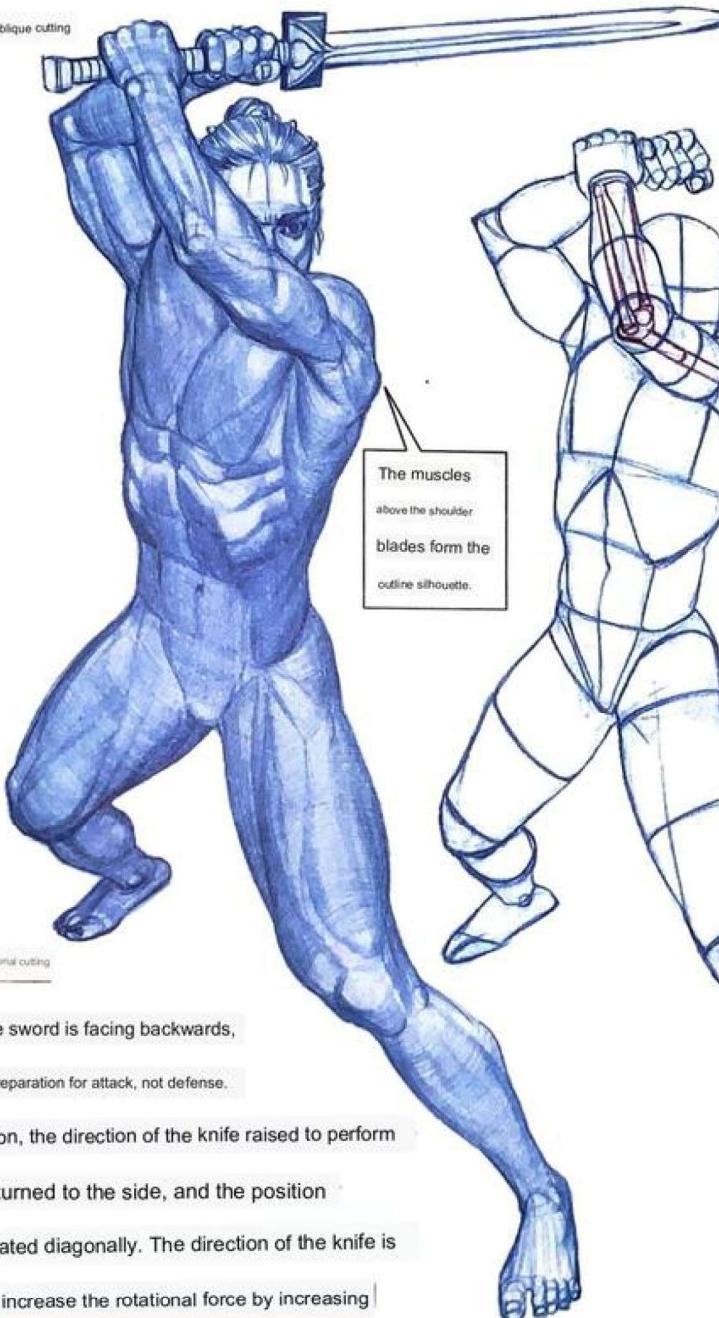
In this position, surrounded by many, there is no time to turn your head and keep an eye on the enemy, so you can use the sword as a mirror to check the movement of the enemy behind you reflected on the side of the sword. It is also a posture for attacking after blocking the opponent's vision by reflecting light to the side of the sword.



Muscle deformation caused by relaxation and contraction • After understanding the human body through figures, the most difficult thing to express the flow of the human body is the change of unfixed muscles. Muscle deformation is caused only by relaxation and contraction, so you need to know about the function of each muscle.



■ Preparation posture for oblique cutting



The direction of the knife for diagonal cutting

The direction of the sword is facing backwards, indicating that it is in preparation for attack, not defense.

I can tell. In addition, the direction of the knife raised to perform diagonal cuts is turned to the side, and the position of both feet is located diagonally. The direction of the knife is bent to the side to increase the rotational force by increasing the length of the knife's movement.

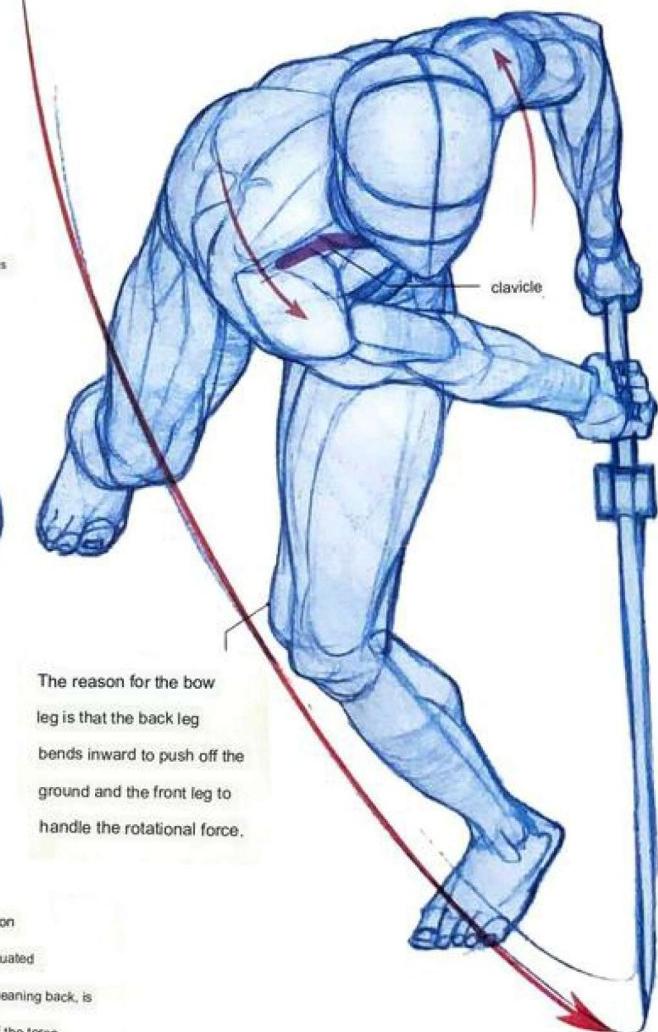


■ When relaxation and contraction are not applied, this is an incorrect answer that expresses the relaxed pectoralis major muscle by lifting the arm upward with the same thickness as when it was contracted.



■ Upper body posture immediately after the diagonal slash

When striking the knife with an oblique slash, one arm is pulled forward and the other arm is pulled back, tilting the shoulder. In this angle, you need to locate the clavicle to save the area of the pectoralis major muscle.



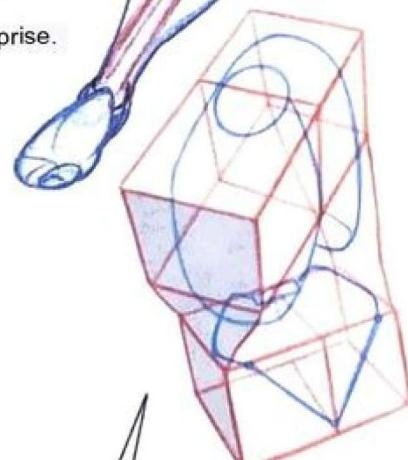
■ When I didn't think of the skeleton If the flow of the ribs, which is accentuated by the movement of the upper body leaning back, is not expressed, the sense of depth of the torso will disappear and tension will not be felt in the posture.

■ Attitude to deal with surprise

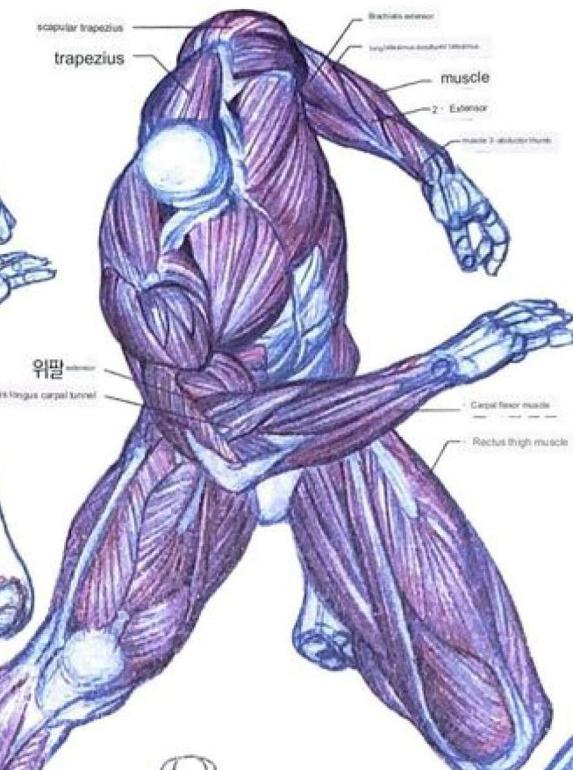
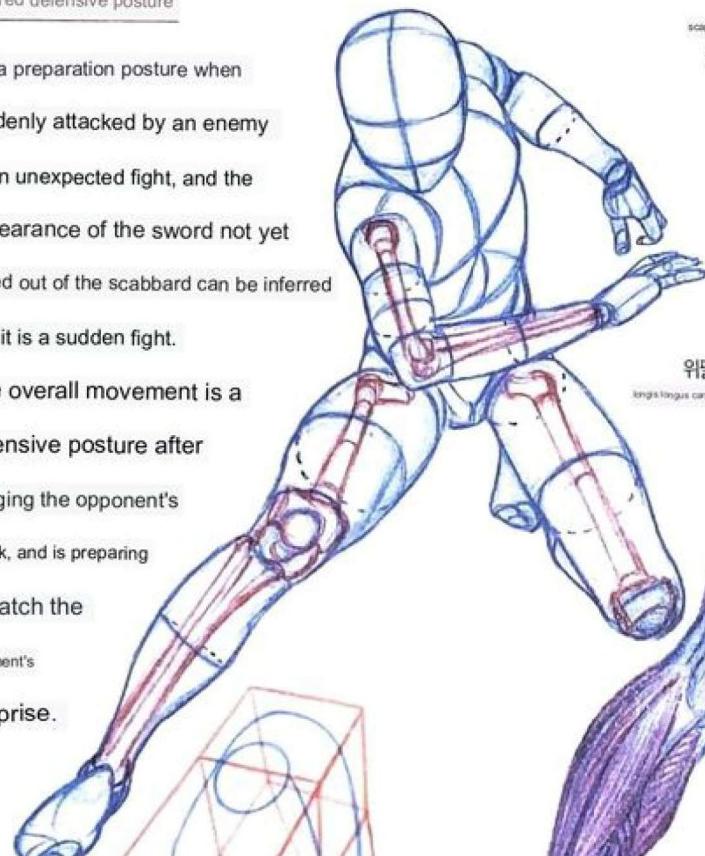
lowered defensive posture

It is a preparation posture when suddenly attacked by an enemy or an unexpected fight, and the appearance of the sword not yet pulled out of the scabbard can be inferred that it is a sudden fight.

The overall movement is a defensive posture after dodging the opponent's attack, and is preparing to catch the opponent's surprise.

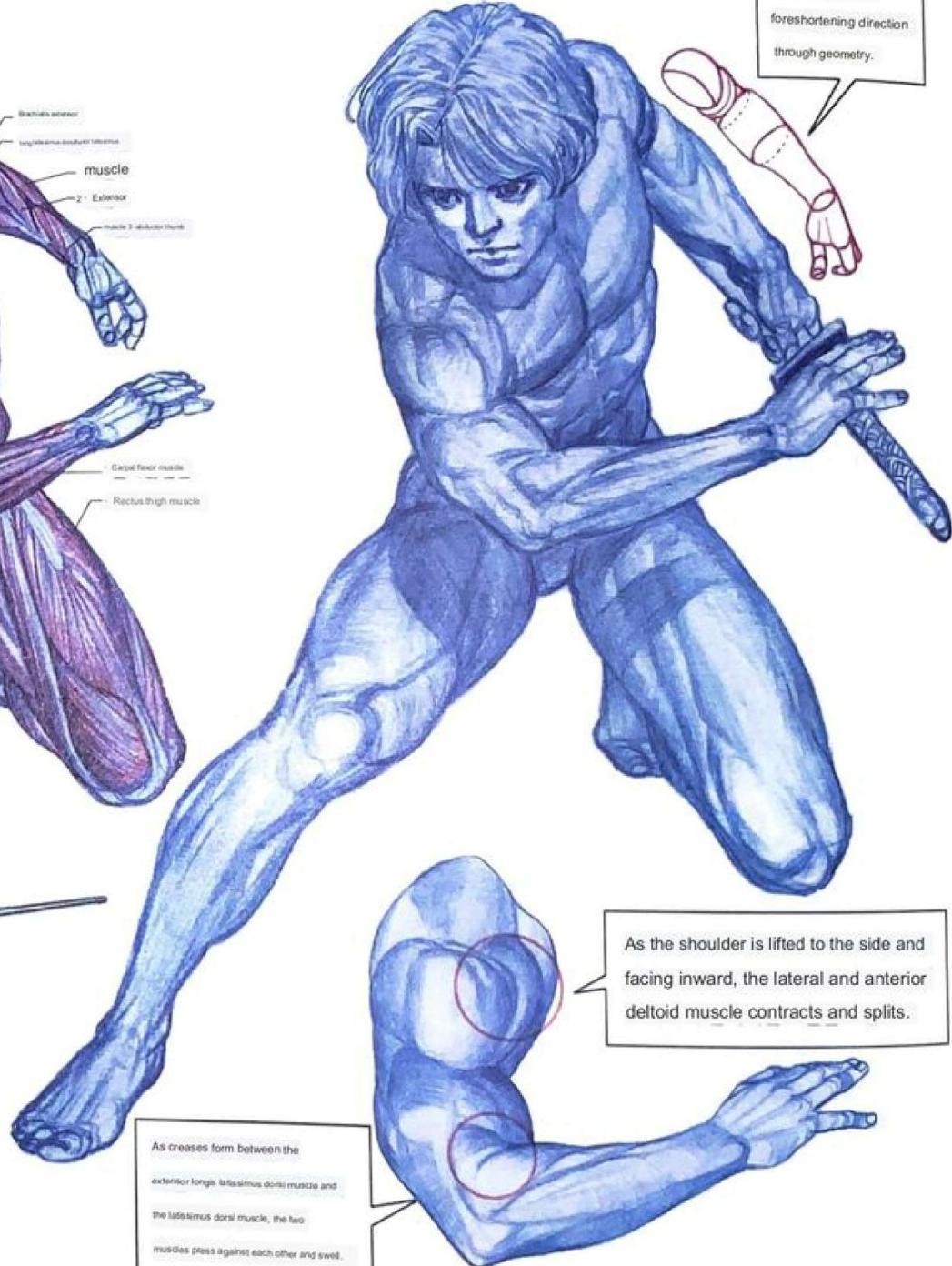


Observe the tilt of the pelvis covered by the arms through the torso box.



Center of gravity leaning forward

- The fact that the center of gravity is leaning forward when the body is lowered implies that it is moving for an attack. If the center of gravity is in the front, you can carry weight when swinging the sword.



Principles of the sword art

The knife in the scabbard quickly

Pull out and strike the opponent

It's a flying skill.

The principle of this technique is to  
caused by pulling out of the sheath.

The friction force came out of the knife.

In an instant, it turns into speed energy

Drawing an ellipse and welding a sword  
will, like a bow

like pulling and releasing  
principle, but in the cartoon

destructive enough to  
not technology, opponent-  
to attack by surprise

It's technology, western movies

When you see the gunmen shoot fast

A duel of picking and matching first

As it was, the Japanese samurai

They also fought with this sword art  
do.



#### Posture to have centrifugal force\*

To get the maximum centrifugal force to swing the knife, twist the  
waist and rotate the knife at the waist to the back to create a distance  
for the knife to rotate.

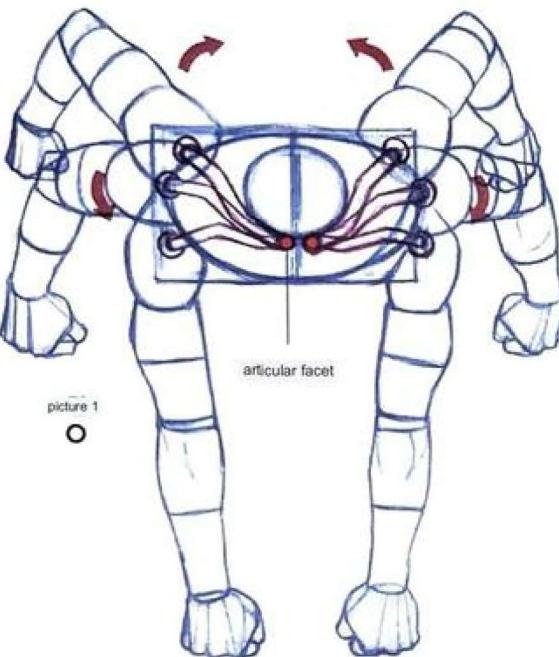
#### Posture after swinging the sword\*

When swinging a sword, the lower body, torso and arms, and wrists create  
rotational force. As in the punch action learned earlier, the power  
of the lower body that spur the ground with the outstretched leg becomes  
the center of kinetic energy. These movements apply to all other  
swinging postures, so you should be familiar with them. For example,  
the posture of a baseball batsman swinging a bat is similar to this picture.

#### Advantages and Disadvantages of 'Do'

The sword, which is suitable for cutting with a curved blade, has excellent killing power, but it is not very  
effective in warfare with armor. Armor-piercing spears or bows or blunt weapons like maces or axes are useful  
on the battlefield. In Korea, swords did not develop because they did not possess weapons except during wartime,  
but in Japan, the samurai class developed using swords for training purposes.

■ One-handed strike from a high angle



picture 1

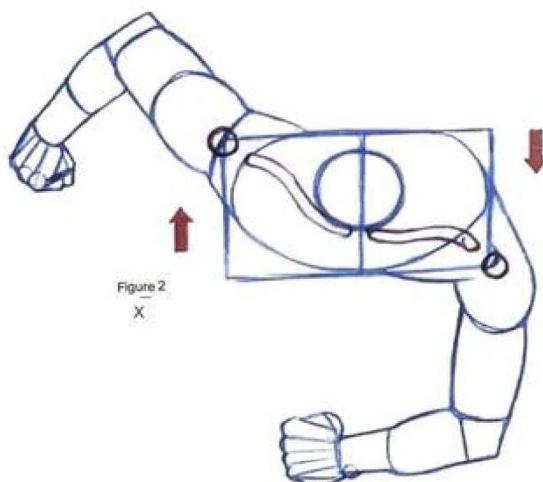


Figure 2  
X

◀ Review of shoulder movement

Shall we review the shoulder movement learned in Chapter 1? As shown in Figure 1, the shoulder draws an arc relative to the collateral articular surface of the clavicle as it moves forward and backward. As shown in Figure 2, if the shoulder joint is not fixed to the end of the clavicle and moves back and forth, it is the same as dislocating the shoulder blade. Another example of the most common error is moving only the arms without moving the shoulders back and forth at all.

Characteristics of one-handed strike

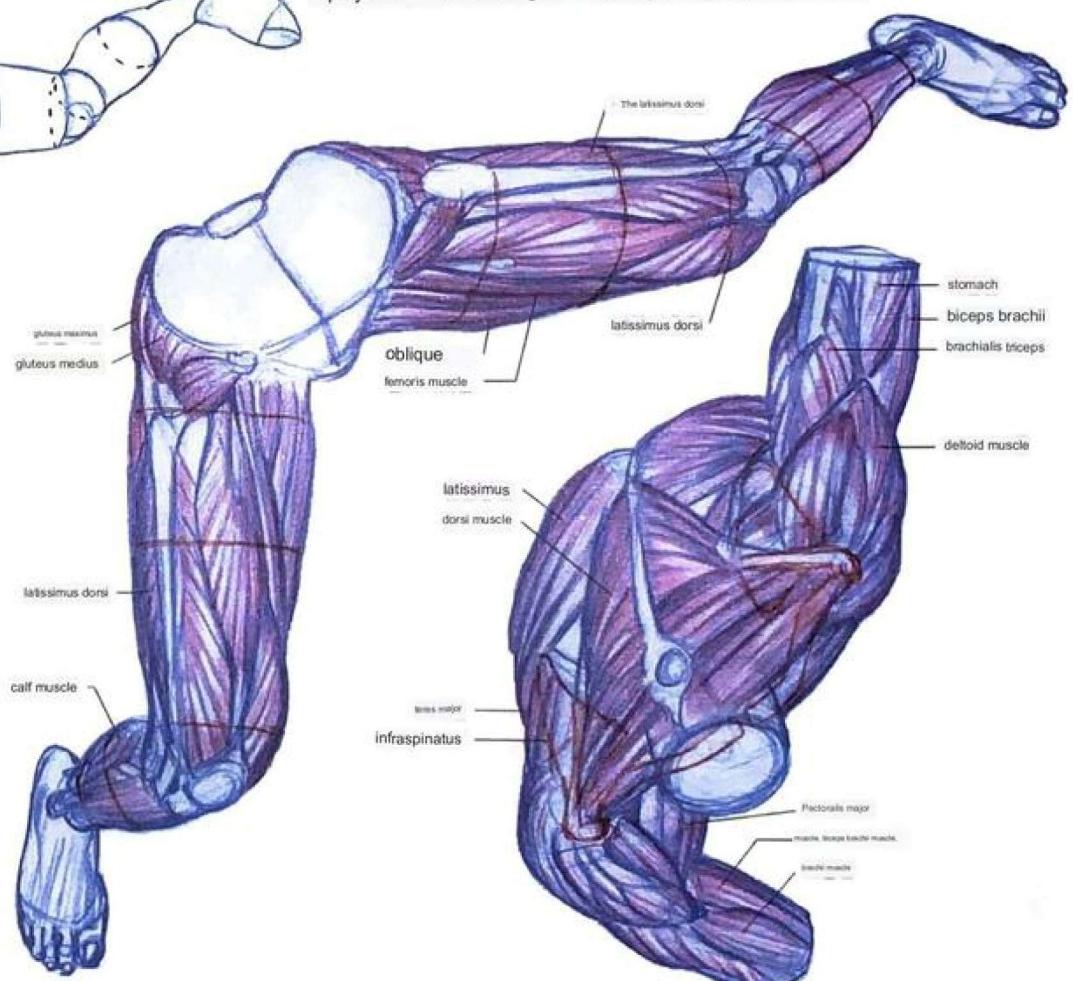
A one-handed strike is less powerful than a two-handed grip on the handle, but it is easier to balance after the strike. Also, upper body movements Since it is free, the stance transition to the next attack is faster. The arm on the opposite side of the sword grip is bent backwards when performing the downward motion.

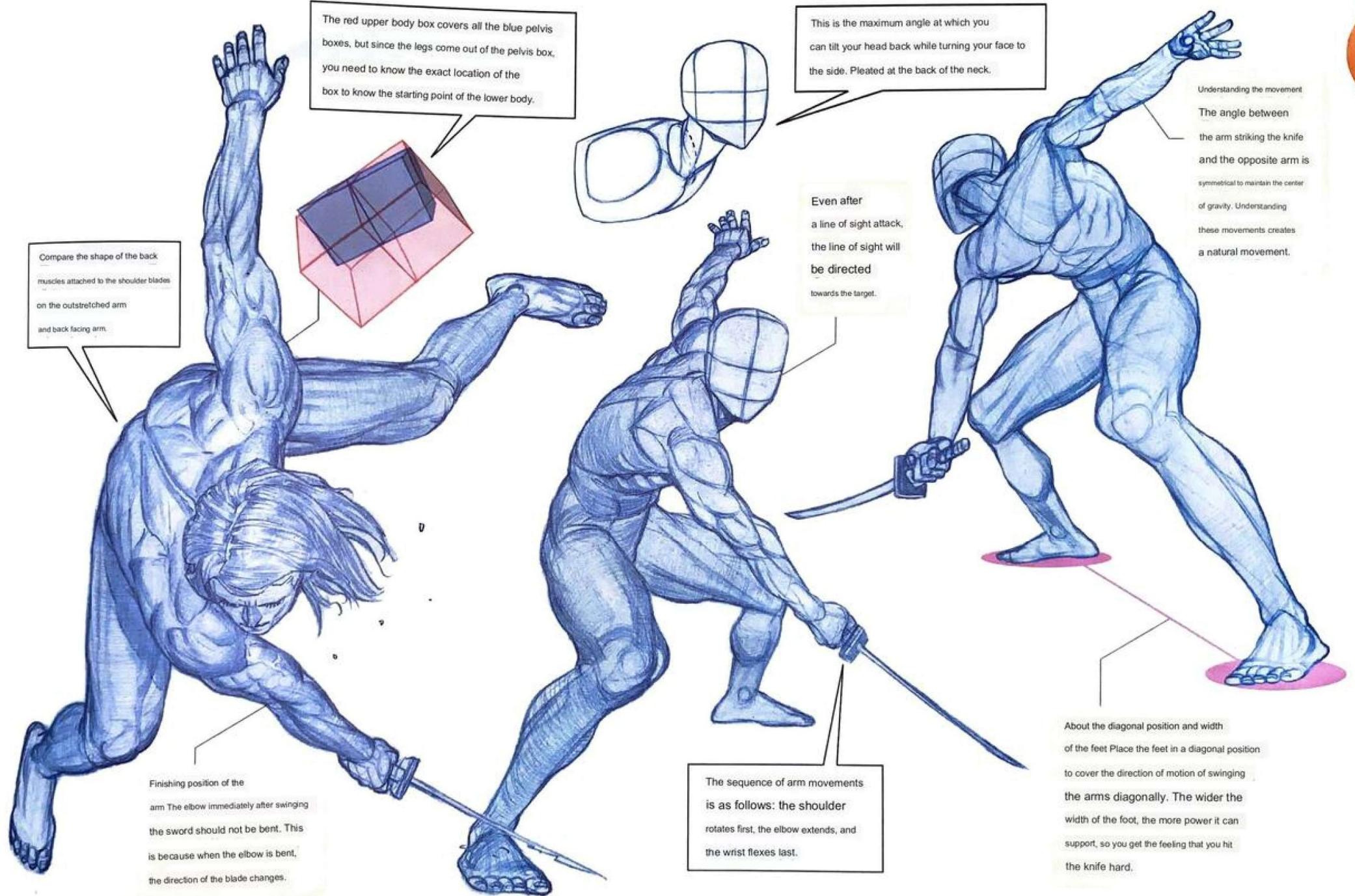
Increase the rotational force of the body and change posture as if an animal is balancing with its tail.

'One-handed slash' is less confined to posture and is faster, but it is difficult to stop instantly, so it is said that it was not used during practice.



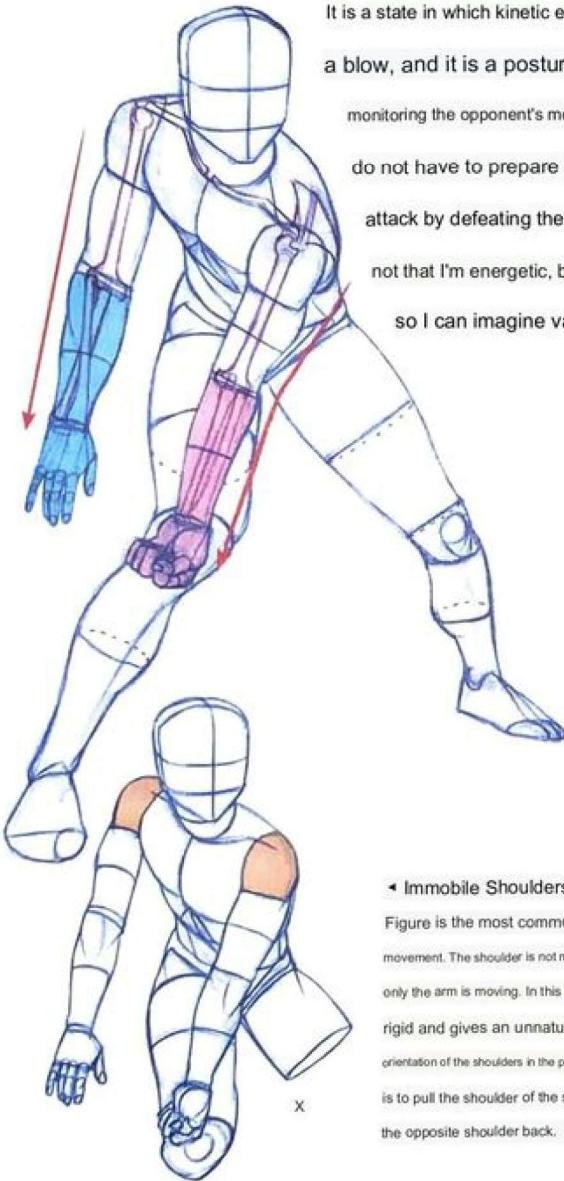
It plays the role of holding the center by changing the direction.





#### ■ Stance after striking a blow

### Posture after diagonal cut



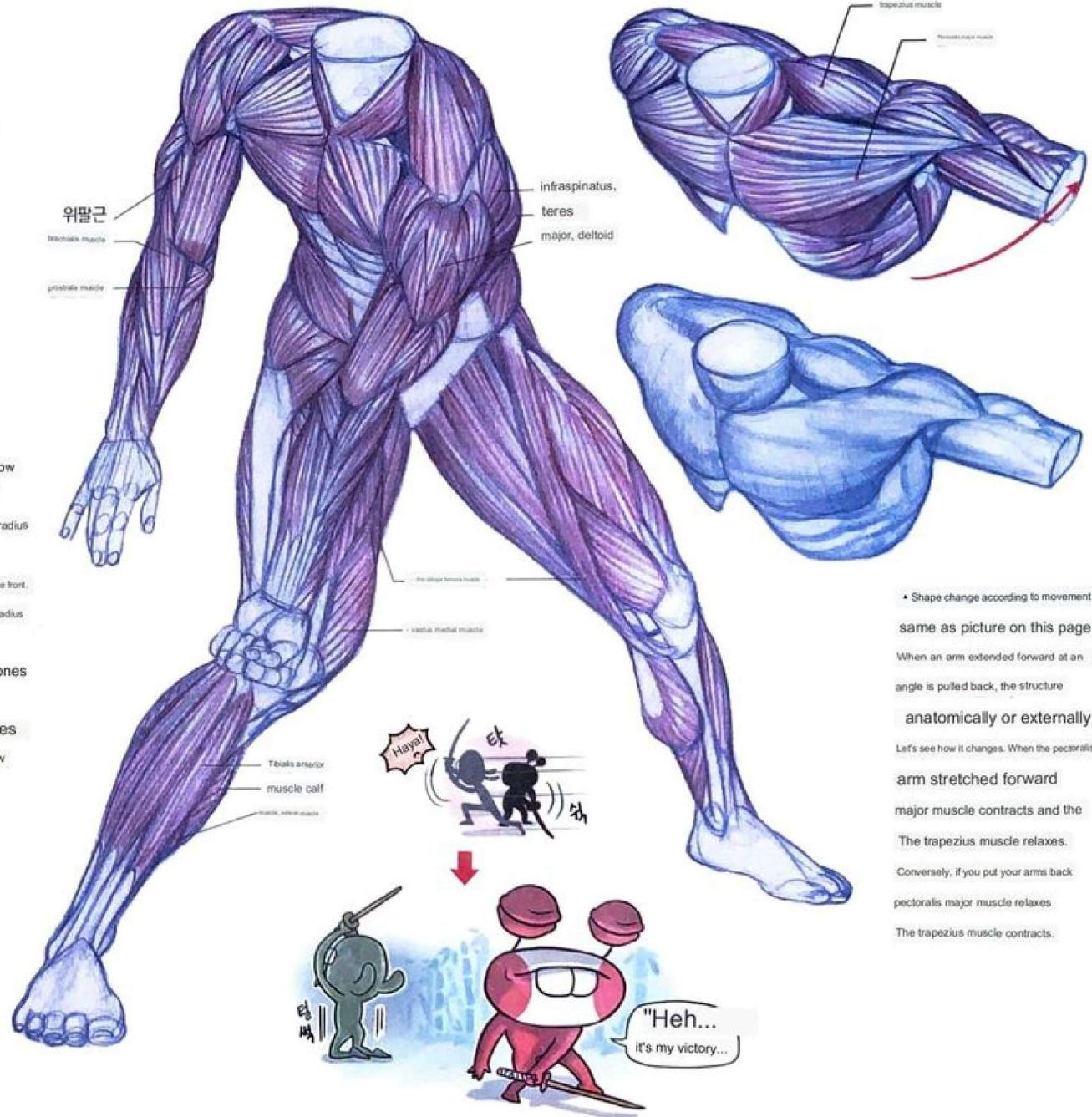
It is a state in which kinetic energy is dissipated after a blow, and it is a posture in which you are monitoring the opponent's movements or when you do not have to prepare for the next attack by defeating the opponent. It's not that I'm energetic, but I'm not relaxed either, so I can imagine various situations.

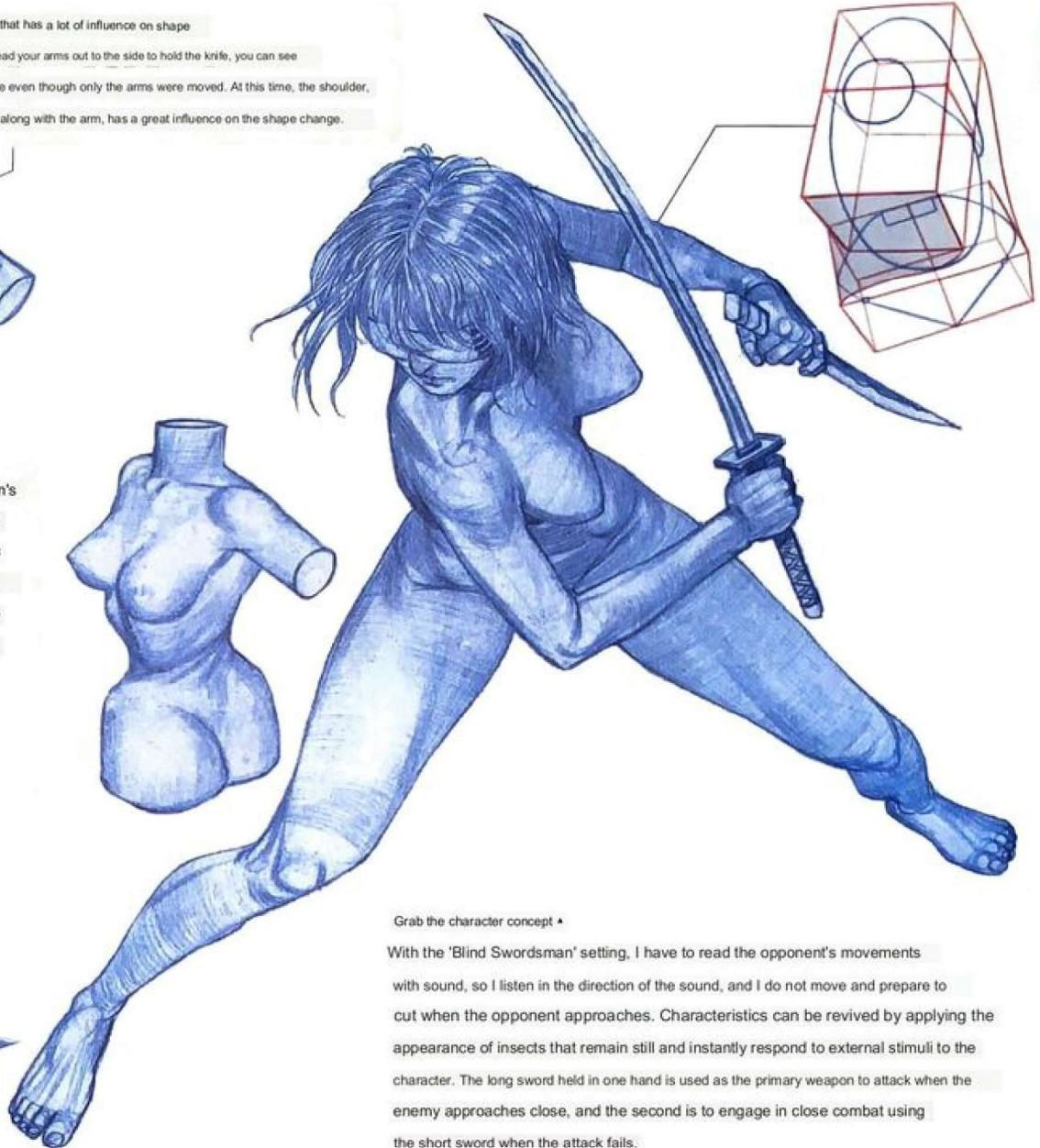
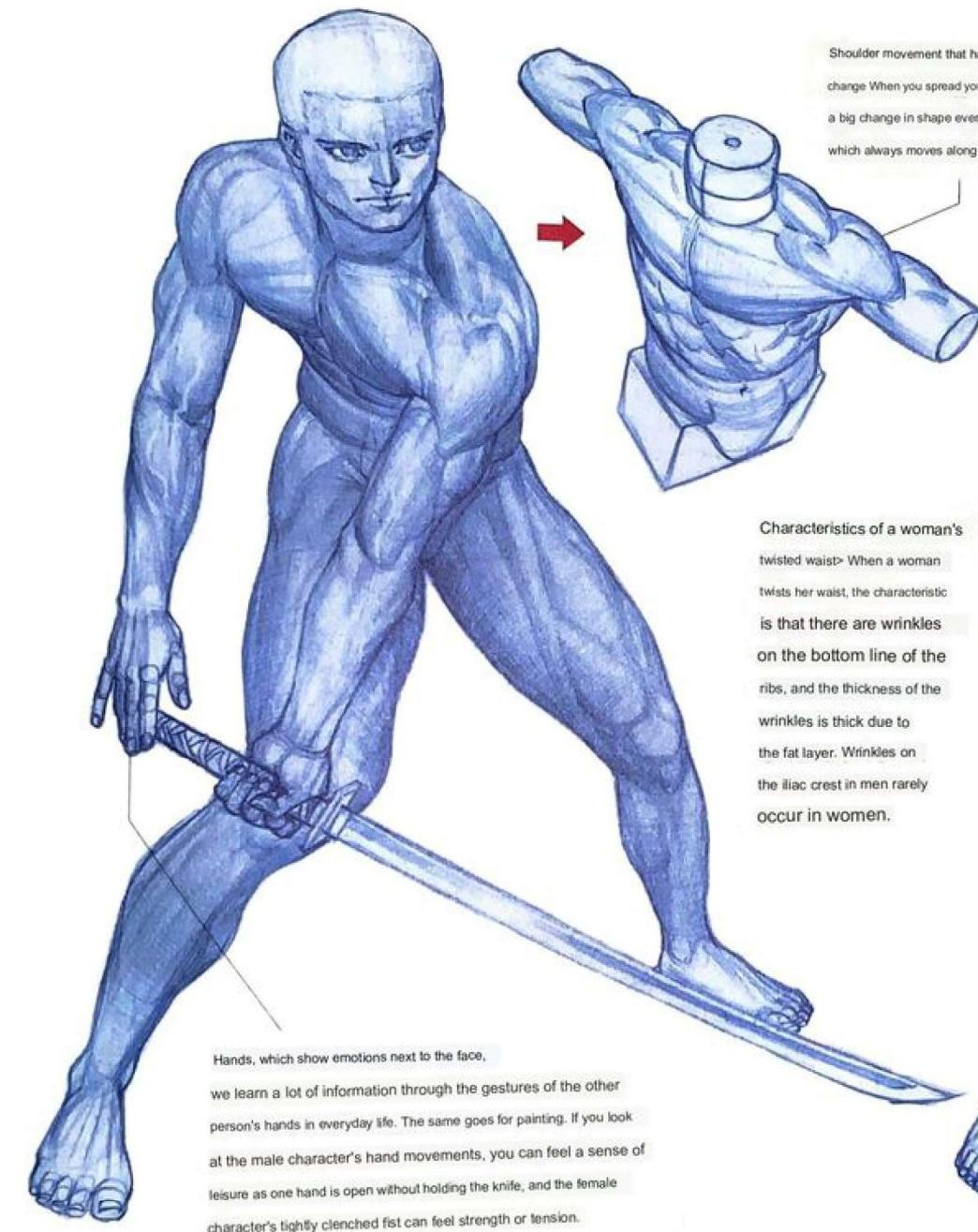
- Hand direction and arm flow  
palm facing forward

The red arm has an ulna and a radius  
The 11 characters are facing side by side, with the back of the hand facing the front  
The blue arm has an ulna and a radius  
It is twisted in an X shape.  
blue arm with twisted bones  
the overall flow  
straight, twisted bones  
The red arm that does not flow  
It breaks once.

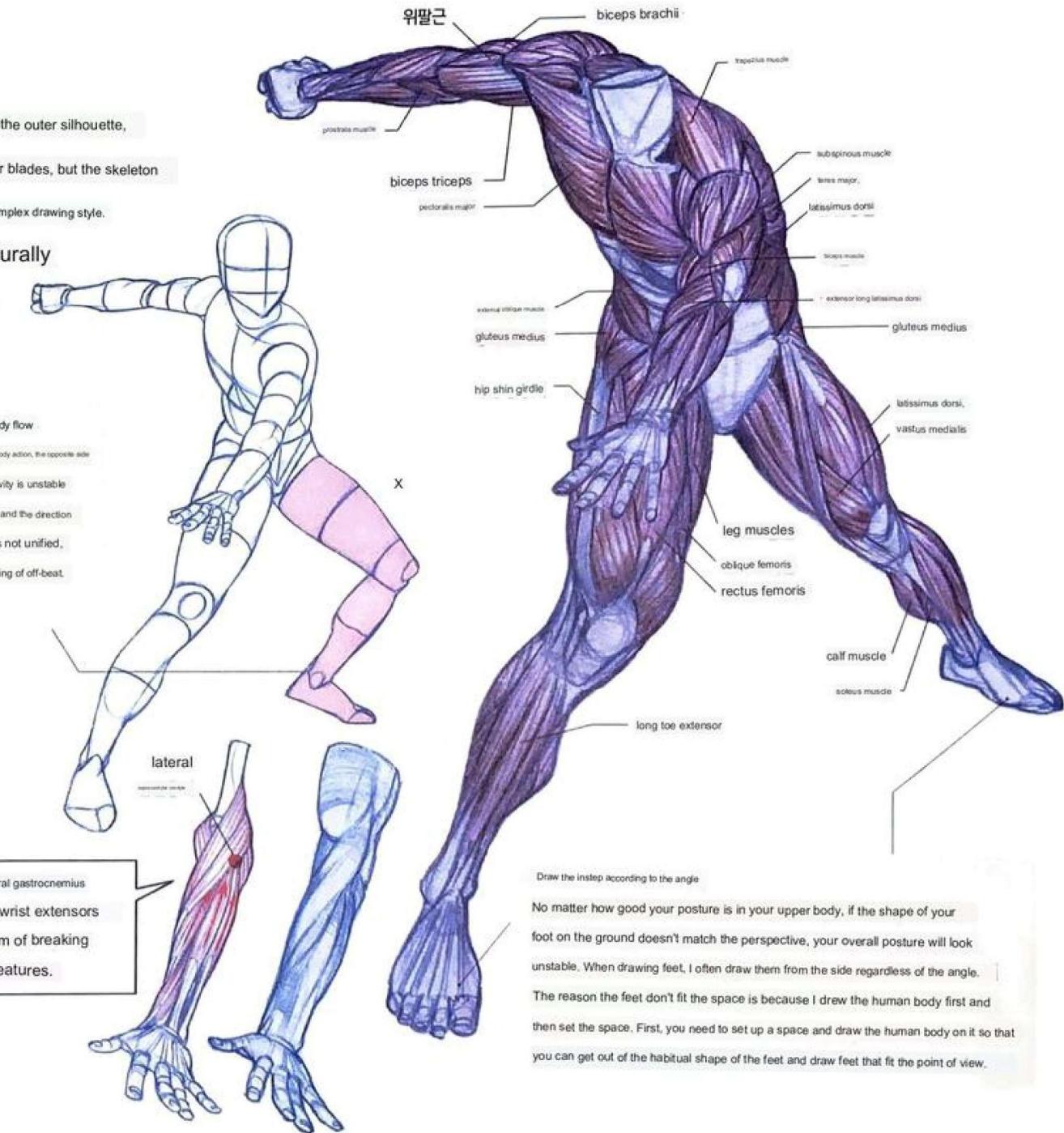
- Immobile Shoulders

Figure is the most common mistake in shoulder movement. The shoulder is not moving back and forth, only the arm is moving. In this case, movement becomes rigid and gives an unnatural feeling. The orientation of the shoulders in the postures on this page is to pull the shoulder of the sword hand forward and the opposite shoulder back.



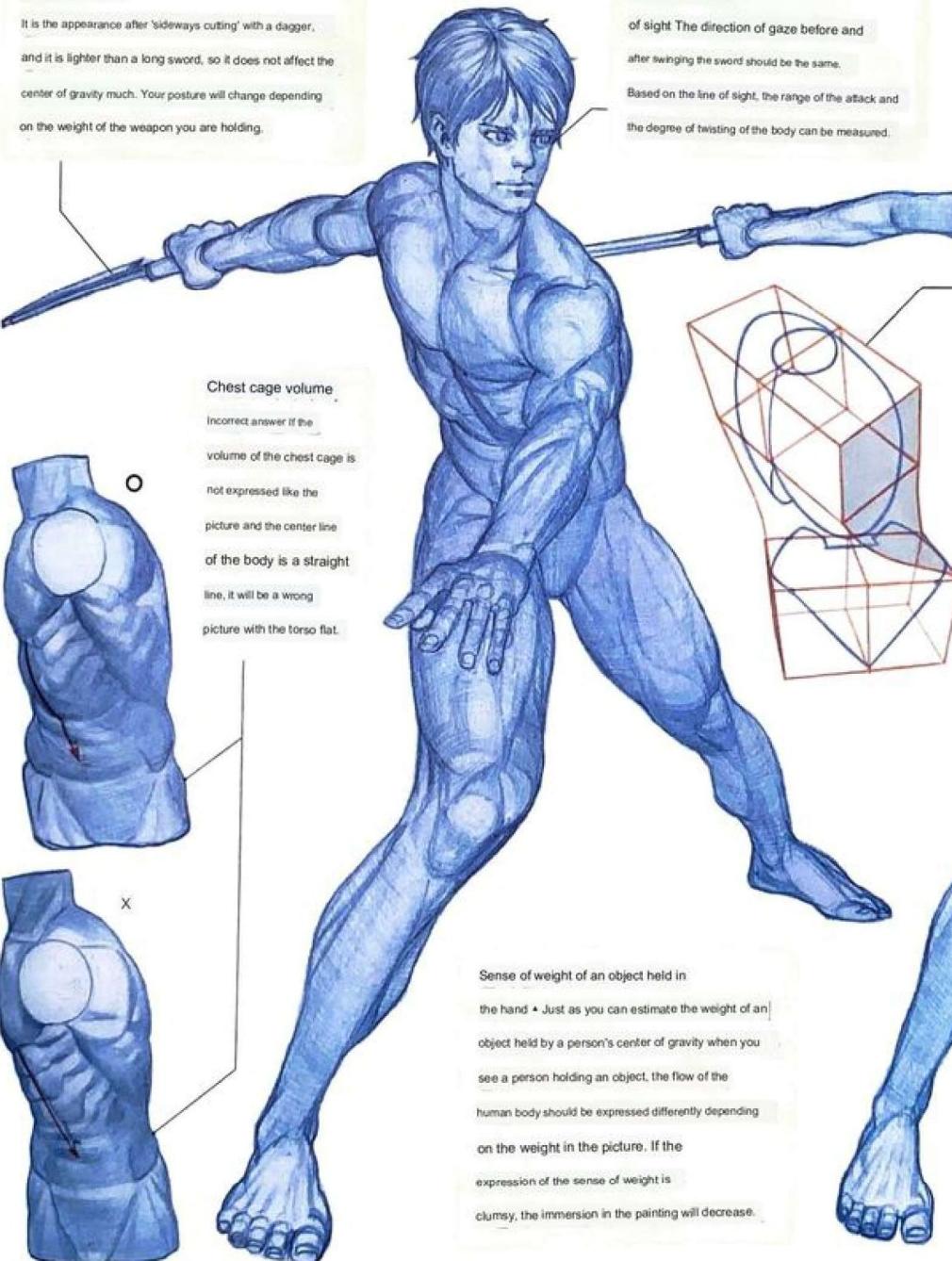


■ Sideways Slashing Stance



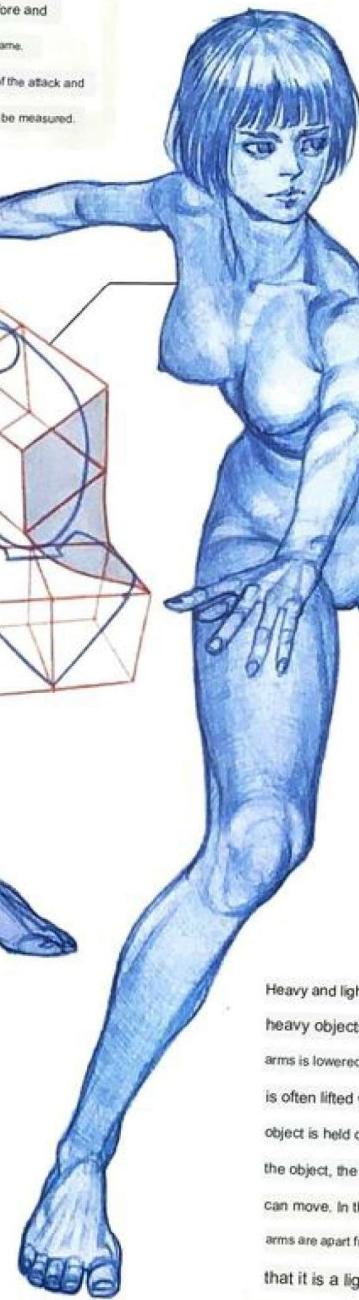
## Analyzing your posture

It is the appearance after 'sideways cutting' with a dagger, and it is lighter than a long sword, so it does not affect the center of gravity much. Your posture will change depending on the weight of the weapon you are holding.



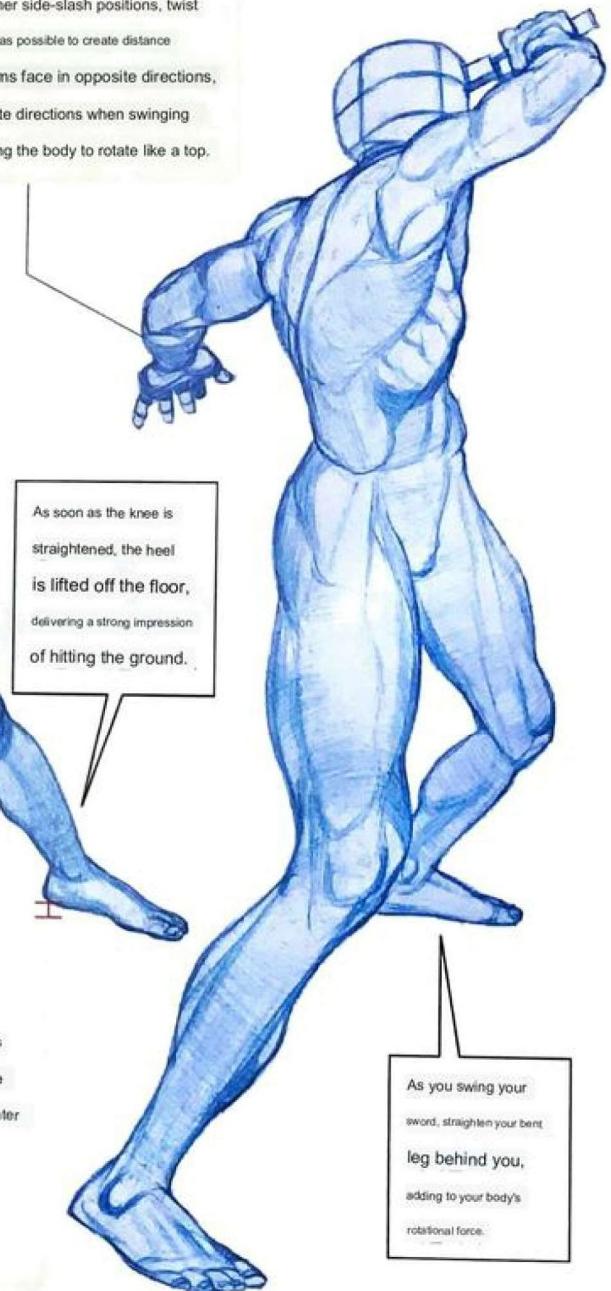
## The importance of line

of sight The direction of gaze before and after swinging the sword should be the same. Based on the line of sight, the range of the attack and the degree of twisting of the body can be measured.



## Swing Ready Position

Similar to the other side-slash positions, twist your body as much as possible to create distance to turn. Both arms face in opposite directions, and keep opposite directions when swinging the sword, causing the body to rotate like a top.



## ■ Holding daggers in both hands

### posture of concealment

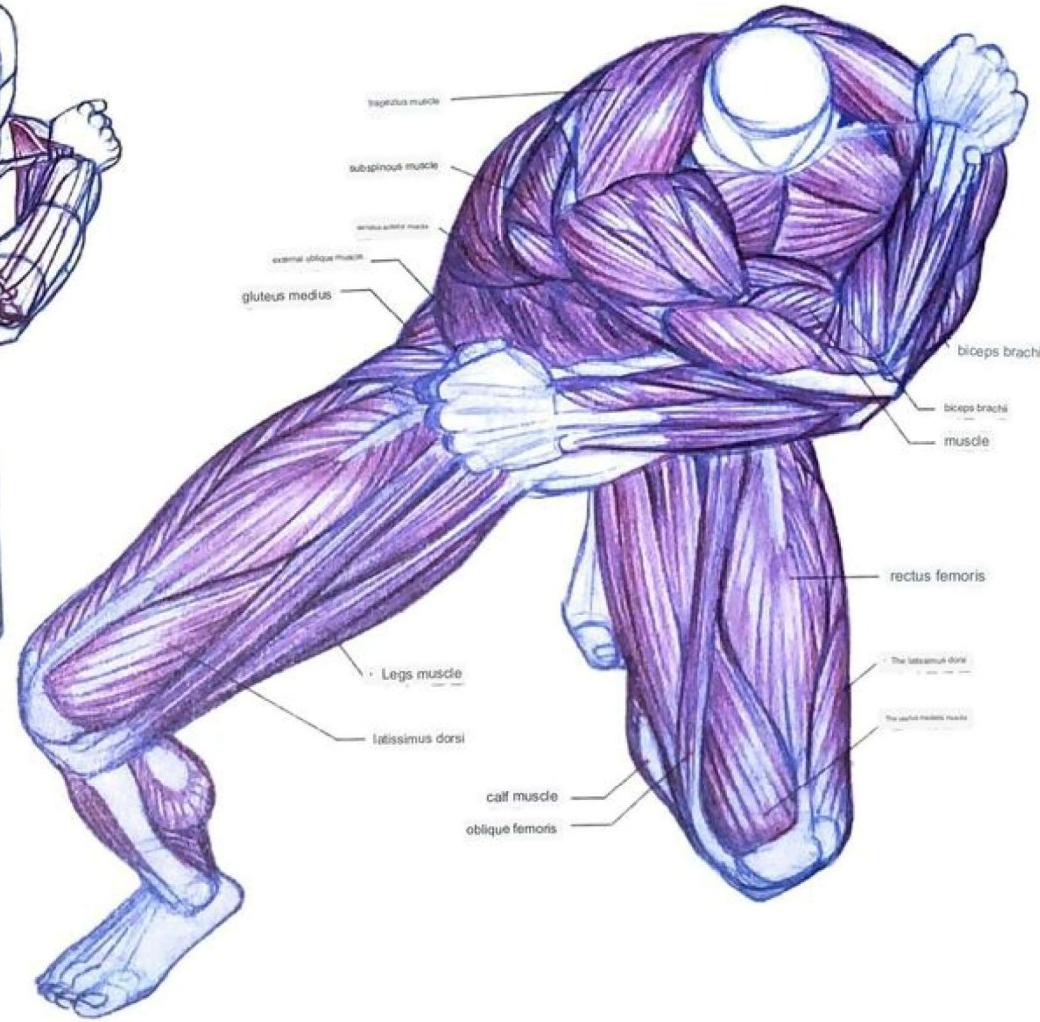
Seeing as they are kneeling and taking the lowest possible posture, it can be assumed that they are in hiding. The ready posture of the upper body, with daggers in both hands and arms folded in an X shape, minimizes the sense of bulkiness of the body, making it efficient to conceal and attack at the same time.

The center of gravity of the body is leaned backwards, so it is a movement that prioritizes defense over attack.



### Characteristics of dagger

The shorter the weapon, the weaker the destructive power, so the wielder must be proficient in taijutsu to be used as a lethal weapon. The technique of using a dagger is closer to taijutsu than swordsmanship, so the style also varies depending on which martial arts the wielder has learned. Usually, depending on the situation and tactics, the grip method is changed at any time, and if you stick to one stance, your attack pattern will change less, making it easier for your opponent to defend. How you hold the dagger makes a big tactical difference. For example, you can hold the knife up or down as shown in the picture on the left. When the knife is held upward, it is easier to cut than to stab, and when held downward, it is used for downward strikes. Dagger throwing also varies depending on the size and shape of the knife. The posture on the left is a technique of cutting with arms drawn in an arc from side to side as if scissoring with arms in an X shape.

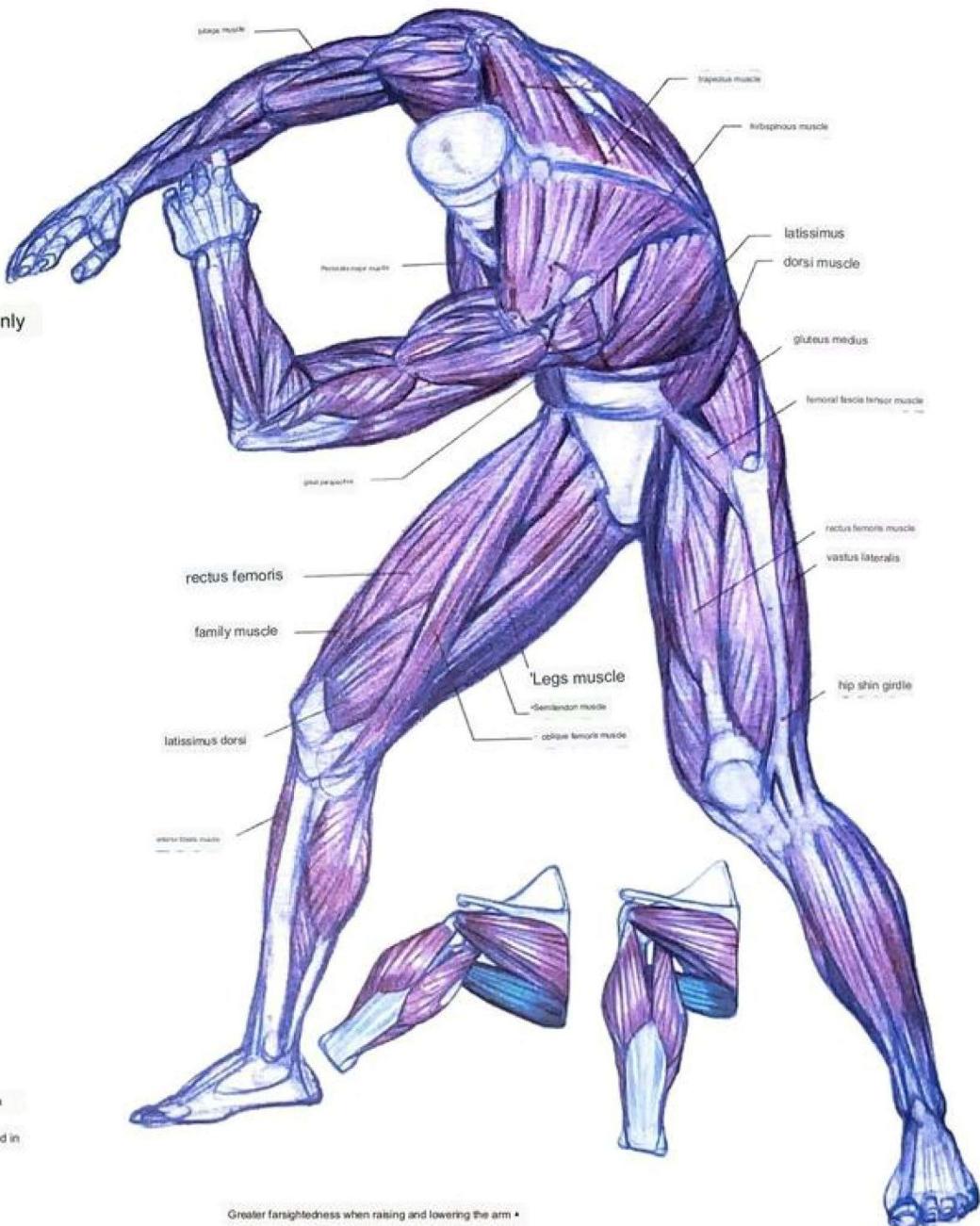
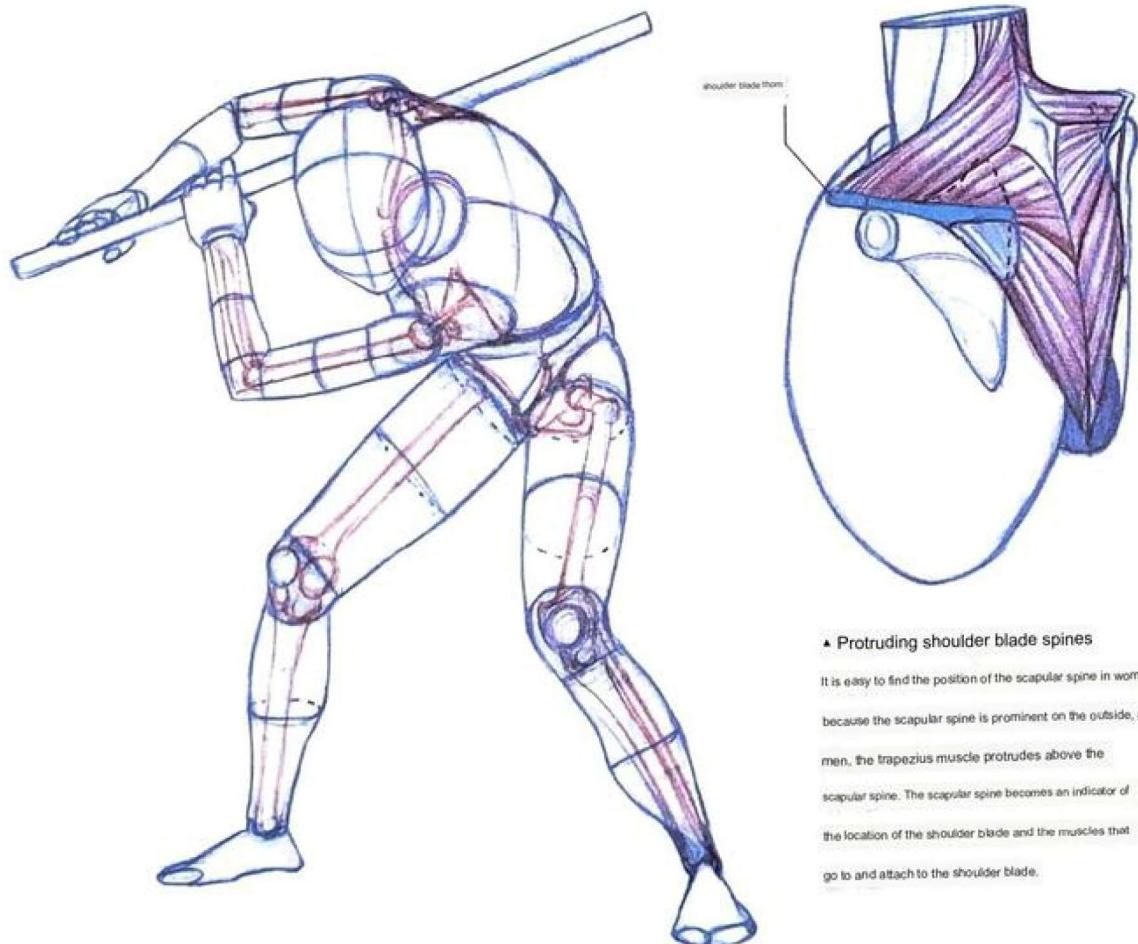




## The posture of holding the bar (1)

### Postural Analysis and Origins of Bongjutsu

This position is in preparation for spinning or swinging the bar, and with a slight upper body erection, it is very similar to the preparation position a baseball batter takes before swinging a bat. It rotates a long rod to attack and defend with its rotational power, and also has the effect of disturbing the opponent. Bongsul is a defense-oriented skill that blocks the opponent's attack. Usually, they practice with a stick, and in actual combat, they engage in war with only a blade inserted. The spear was the most used weapon, as even untrained soldiers could use a simple thrusting attack at an approaching enemy.



Greater farsightedness when raising and lowering the arm \*

When the arms are lowered, the area of the teres major is narrower than when the arms are raised, but the thickness is thicker, so it visually stands out more.

erector spinae in men and women

erector spinae

Unlike men who have curves due to thickness, woman's back

The thickness of the erector spinae

thin, flat flow

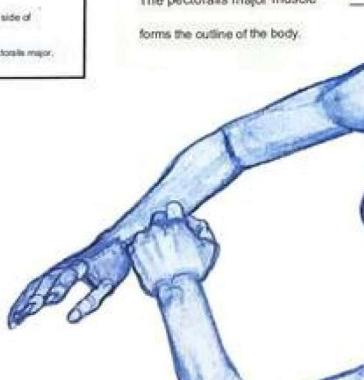
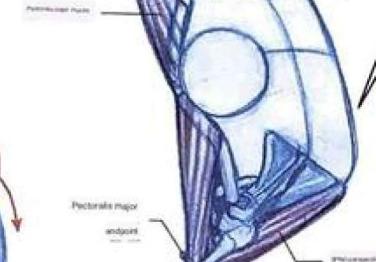
I see.

female big breasts

The pectoralis major muscle

forms the outline of the body.

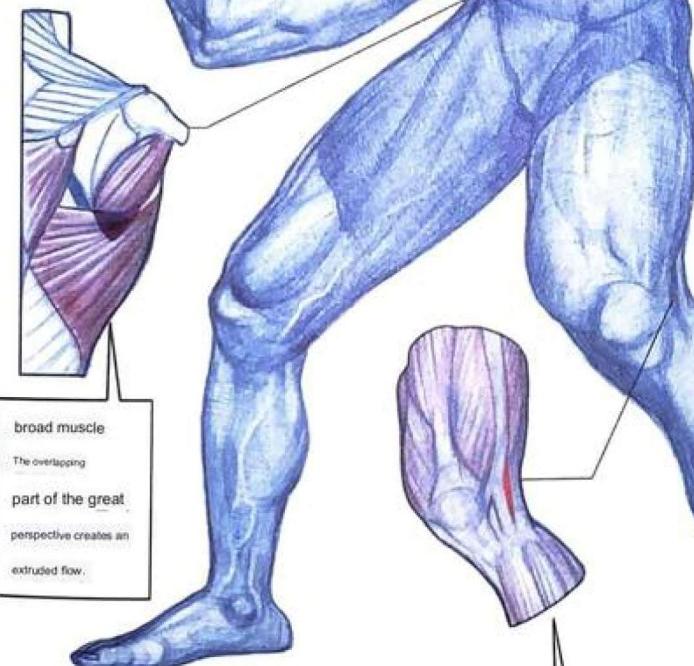
The endpoints of the teres major  
attach to the opposite side of  
the endpoints of the pectoralis major.



#### Changes caused by shoulder movement

When the arms are bent backwards as

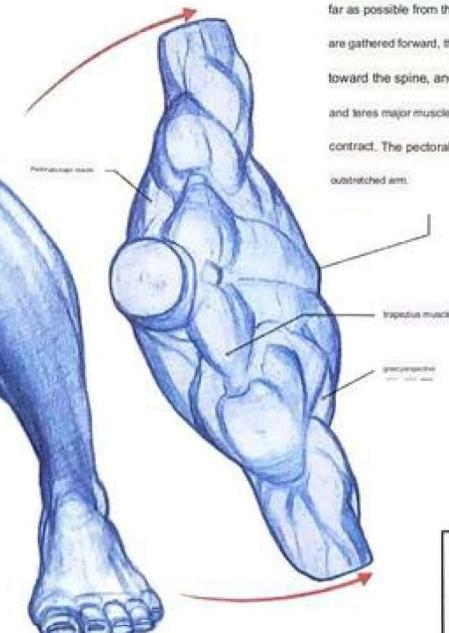
far as possible from the posture where the arms are gathered forward, the shoulder blades converge toward the spine, and the upper trapezius and teres major muscles attach to the shoulder blades contract. The pectoralis major relaxes along the outstretched arm.



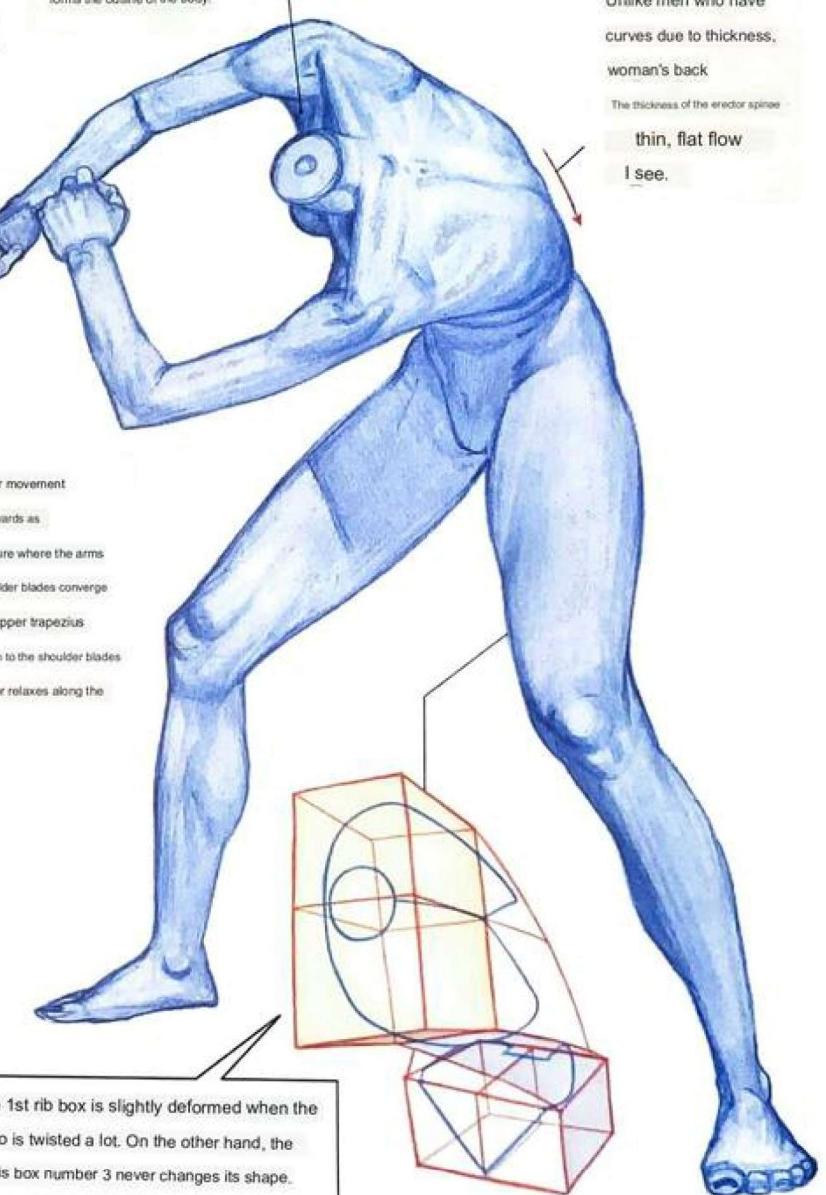
broad muscle

The overlapping part of the great pectoral muscle creates an extruded flow.

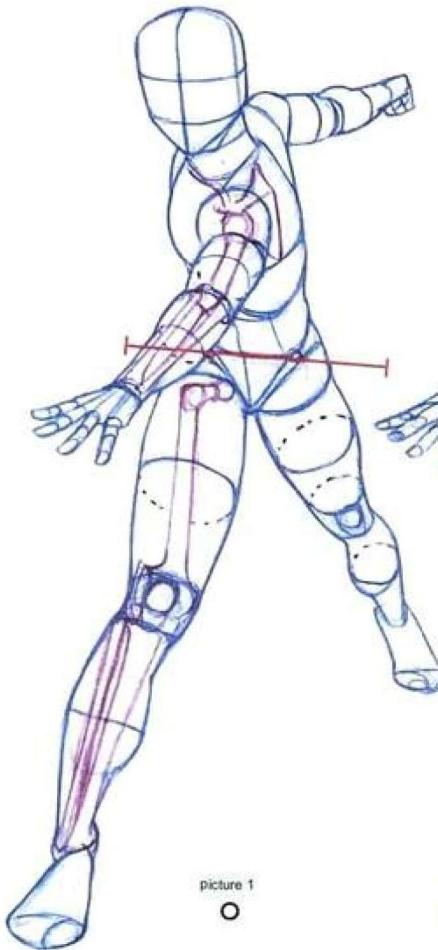
A boundary is created between the iliotibial girdle and the tendons of the biceps femoris.



The 1st rib box is slightly deformed when the torso is twisted a lot. On the other hand, the pelvis box number 3 never changes its shape.



The posture of holding the bar (2)



picture 1  
O

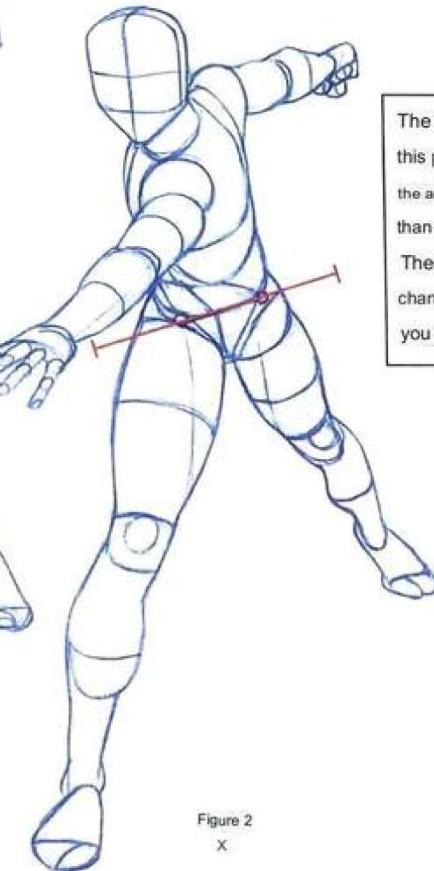
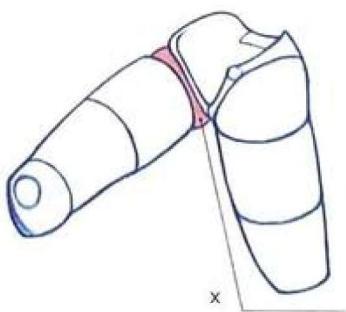


Figure 2  
X

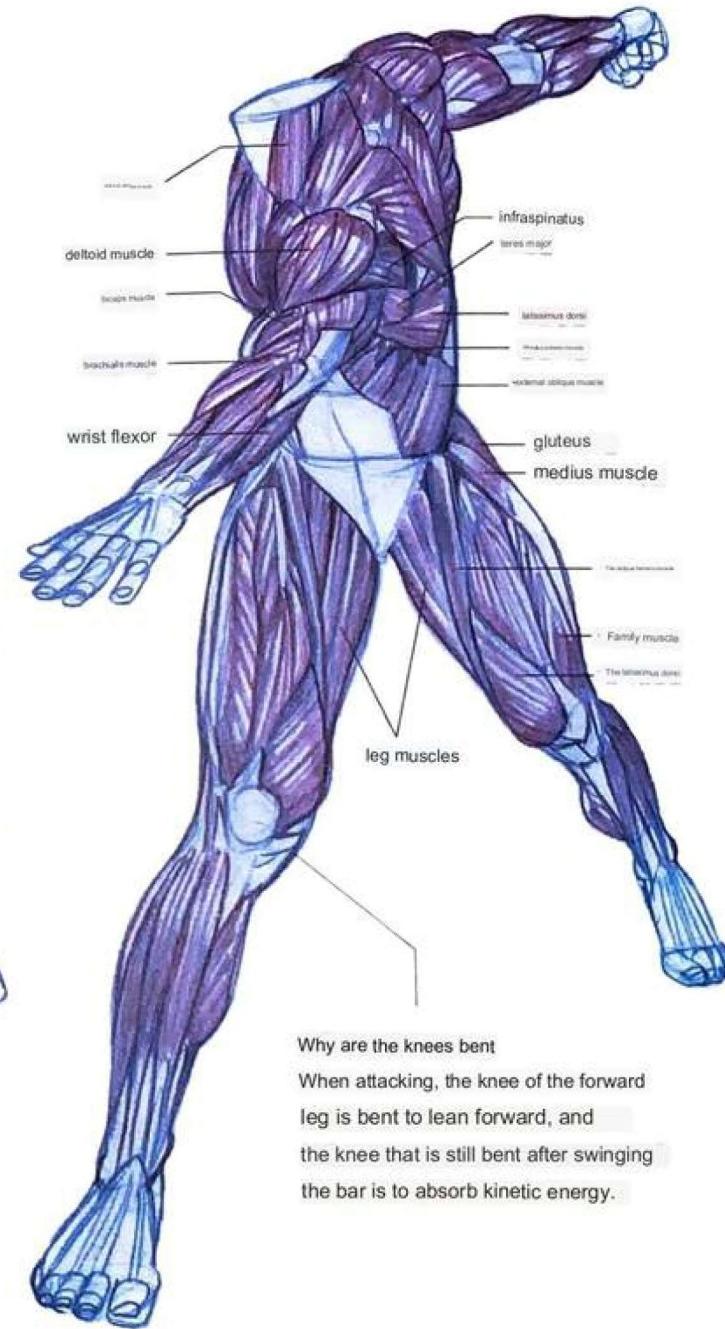
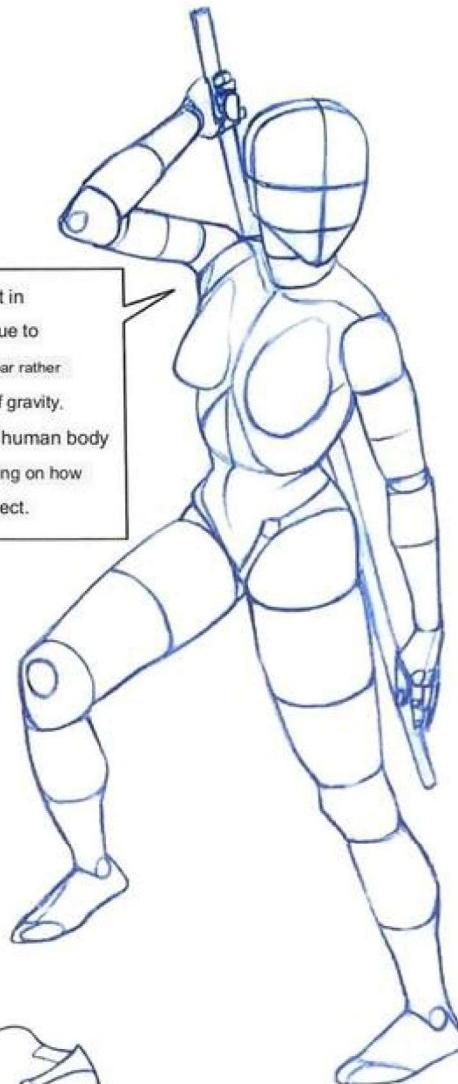
Limitation of the range of motion in which the shoulder and pelvis can be distorted

Depending on the degree of flexibility, the shoulders and pelvis can usually rotate up to 90 degrees as shown in Figure 1. Although it can be twisted further as shown in Figure 2 momentarily by the centrifugal force of swinging a heavy object, it is impossible to maintain this state.



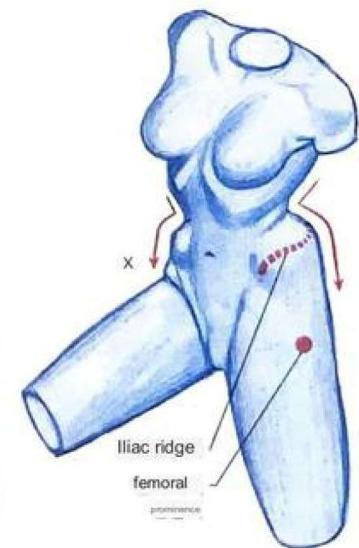
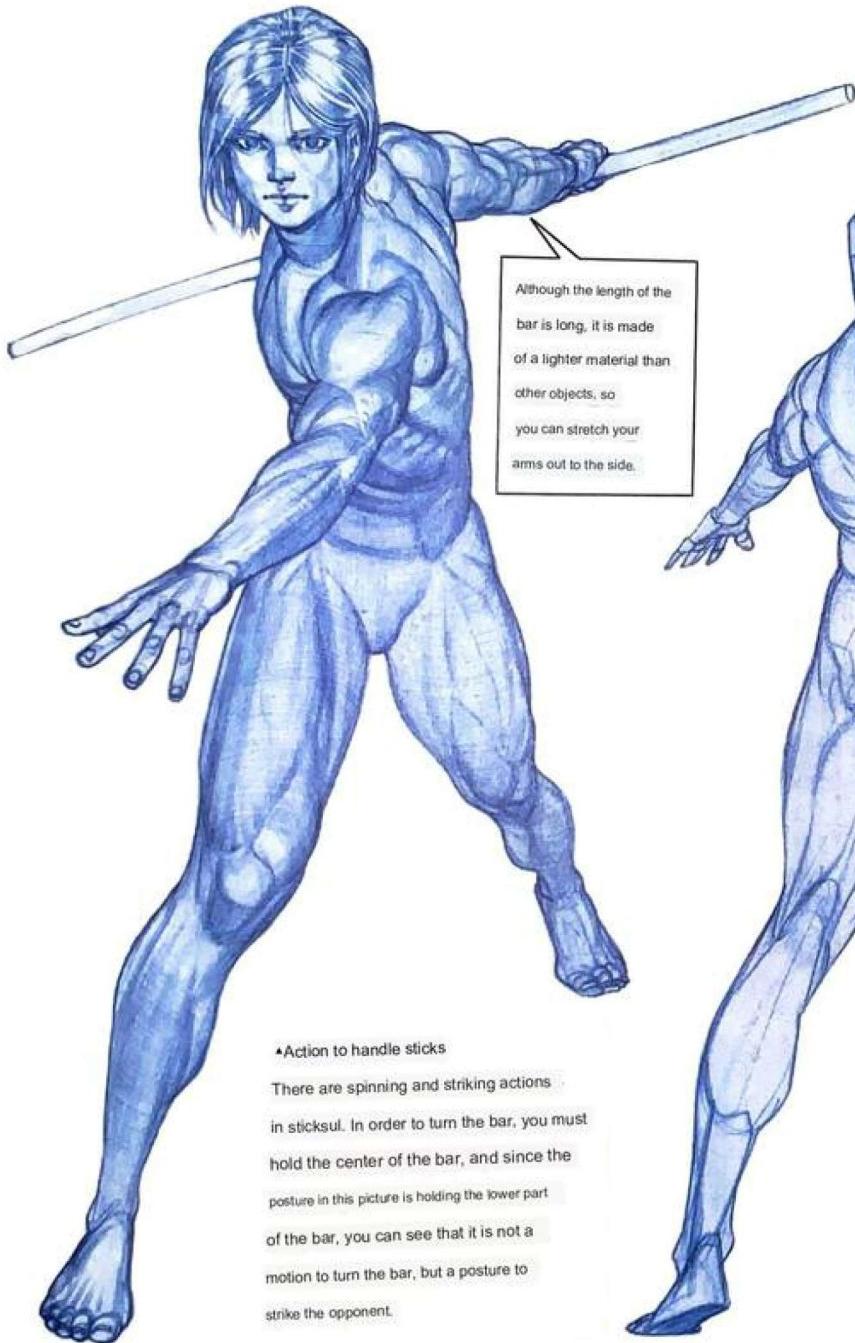
X

Error due to hard material representation  
If you think of the material of the figure as a hard material, not skin, when you bend the leg, a space will open like a painted part.



Why are the knees bent

When attacking, the knee of the forward leg is bent to lean forward, and the knee that is still bent after swinging the bar is to absorb kinetic energy.

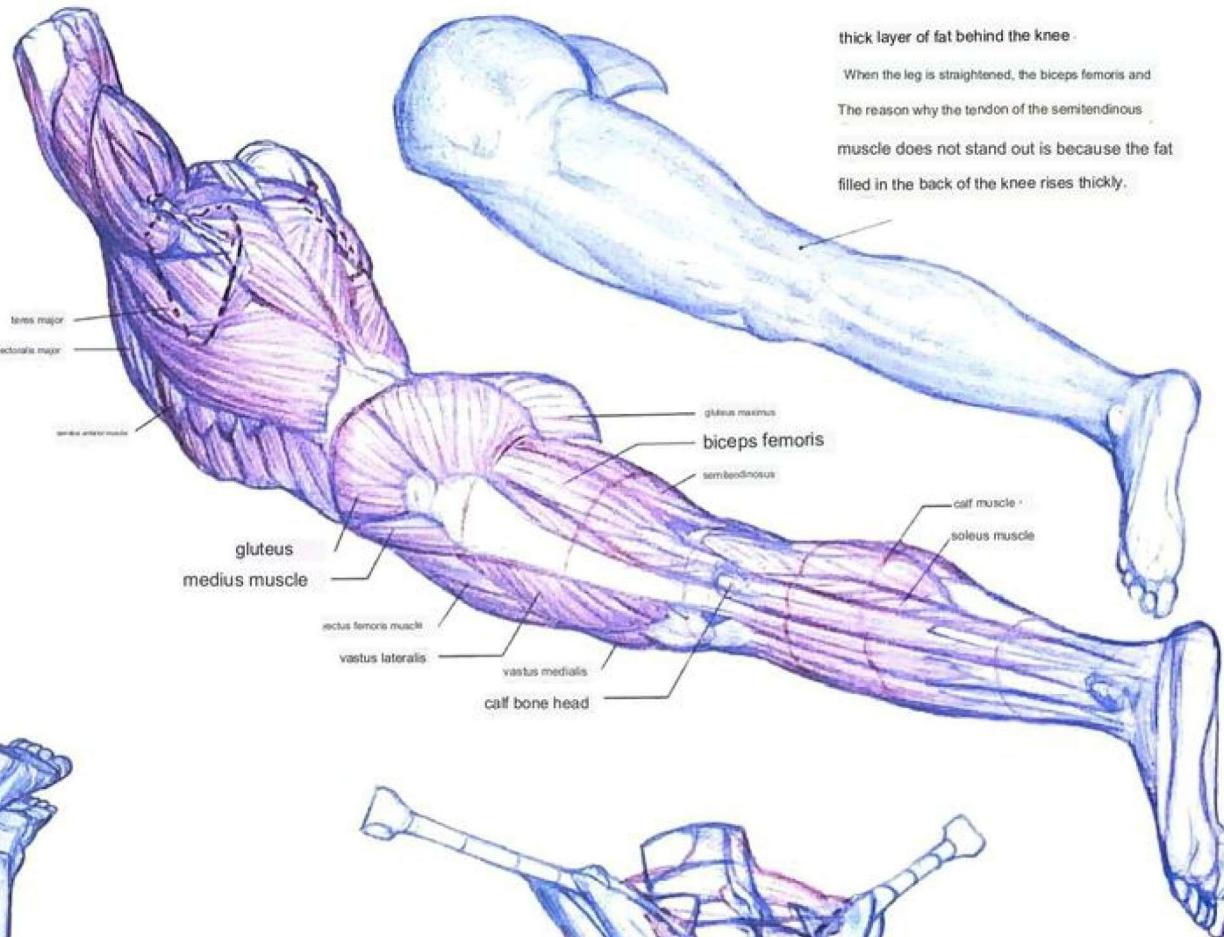
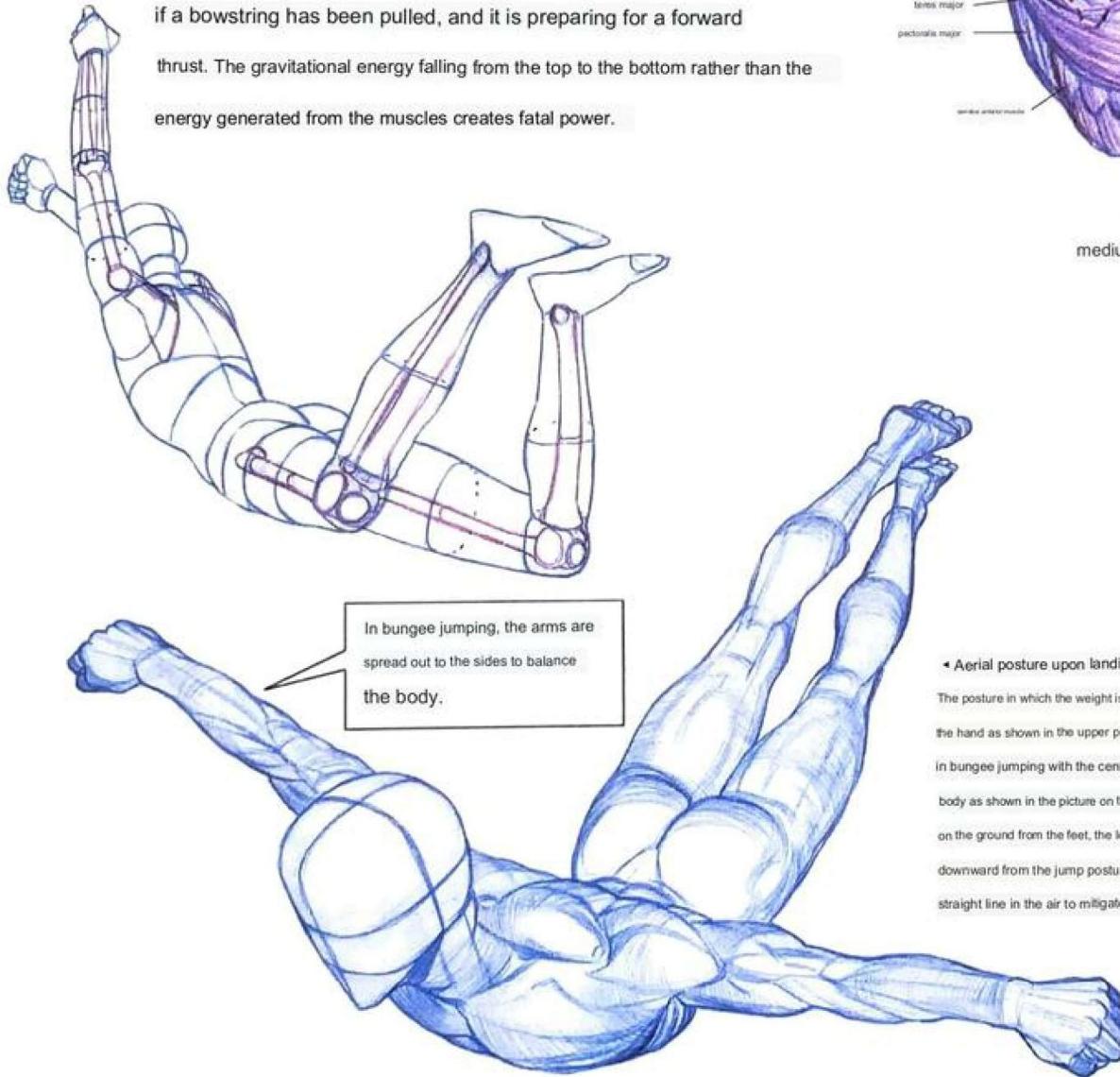


■ Falling posture holding a spear

ready to dive

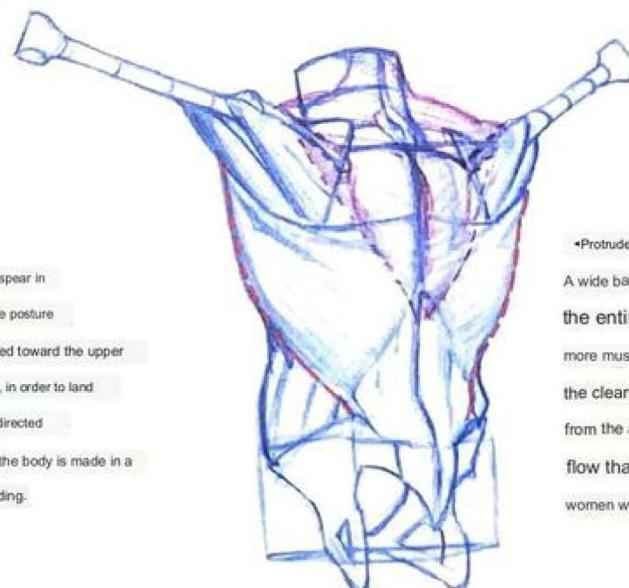
This is the posture of jumping towards an enemy lower than yourself with a pointed spear and trying to strike it down. The overall flow of the body is leaning back as

if a bowstring has been pulled, and it is preparing for a forward thrust. The gravitational energy falling from the top to the bottom rather than the energy generated from the muscles creates fatal power.



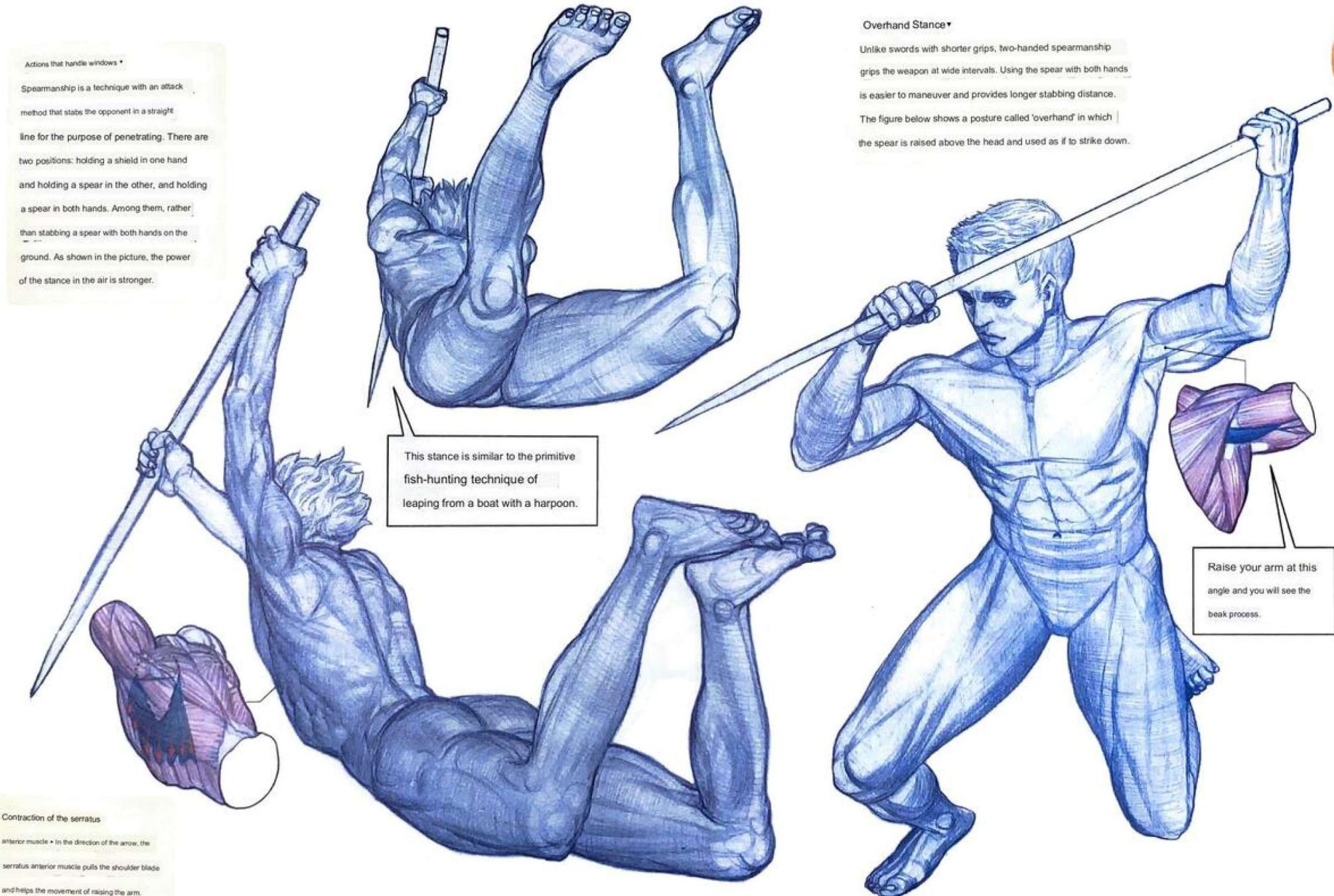
■ Aerial posture upon landing

The posture in which the weight is shifted toward the spear in the hand as shown in the upper picture is similar to the posture in bungee jumping with the center of gravity directed toward the upper body as shown in the picture on the side. Conversely, in order to land on the ground from the feet, the lower body must be directed downward from the jump posture, and the flow of the body is made in a straight line in the air to mitigate the impact of landing.



## Actions that handle windows •

Spearmanship is a technique with an attack method that stabs the opponent in a straight line for the purpose of penetrating. There are two positions: holding a shield in one hand and holding a spear in the other, and holding a spear in both hands. Among them, rather than stabbing a spear with both hands on the ground. As shown in the picture, the power of the stance in the air is stronger.



## Overhand Stance•

Unlike swords with shorter grips, two-handed spearmanship grips the weapon at wide intervals. Using the spear with both hands is easier to maneuver and provides longer stabbing distance.

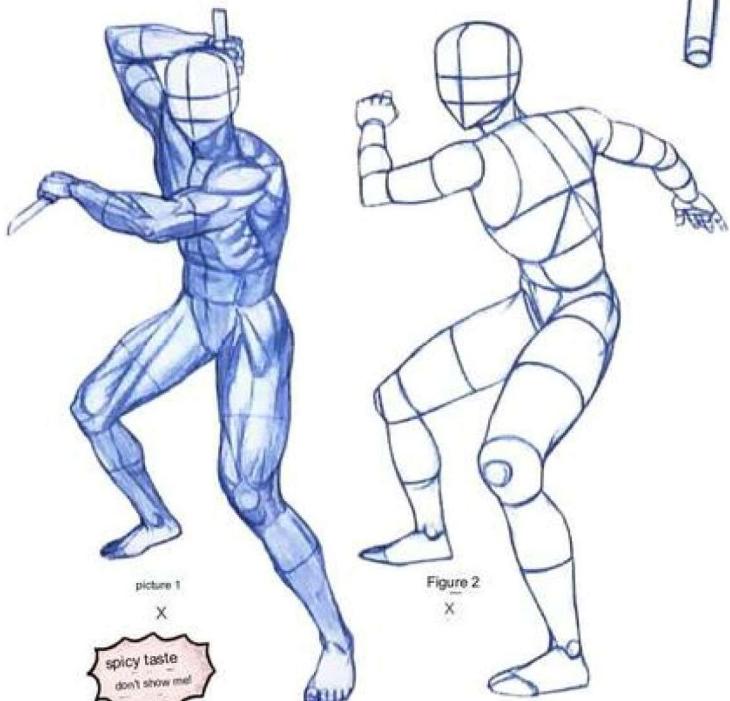
The figure below shows a posture called 'overhand' in which the spear is raised above the head and used as if to strike down.

## ■ Tonfa Attack Stance

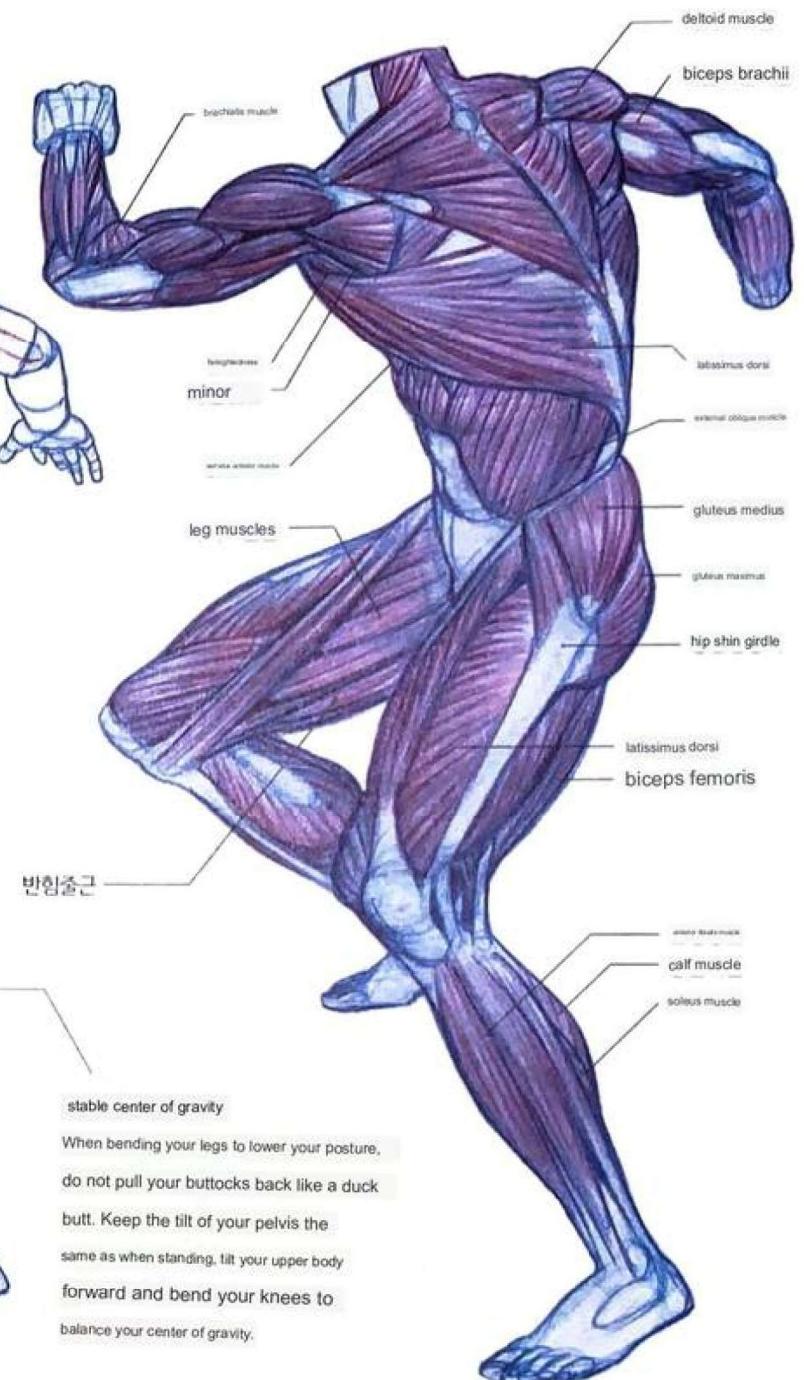
### Features of Tonfa

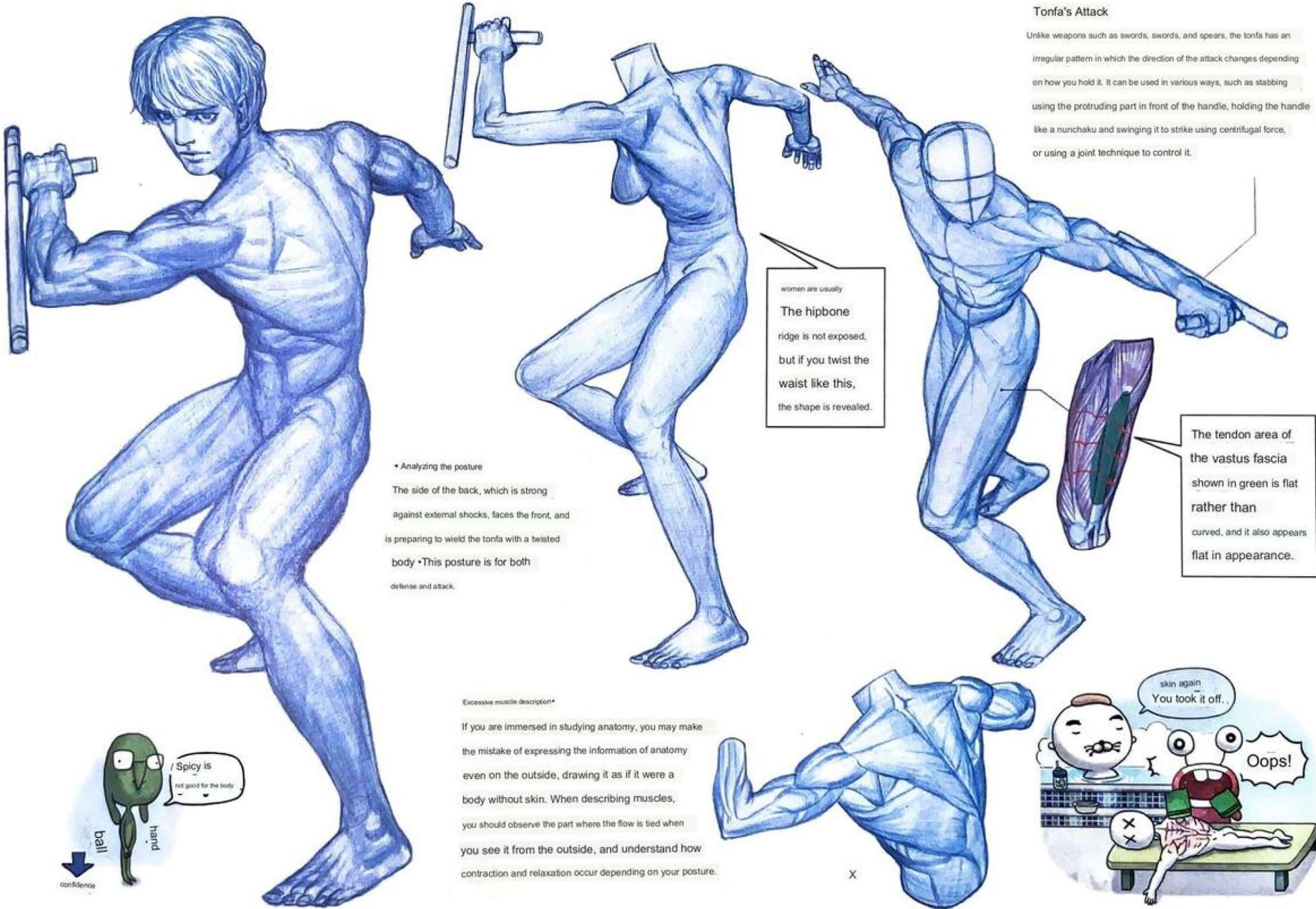
The tonfa is a weapon derived from the handle of a farming implement. It forms a guard on the outside of the arm to strengthen bare-handed martial arts and at the same time swing it at the enemy to strike. The tonfa can block the opponent's attack like a shield, and because it has no blade, it can subdue the opponent without seriously hurting it.

It is also a weapon used by the police for security.

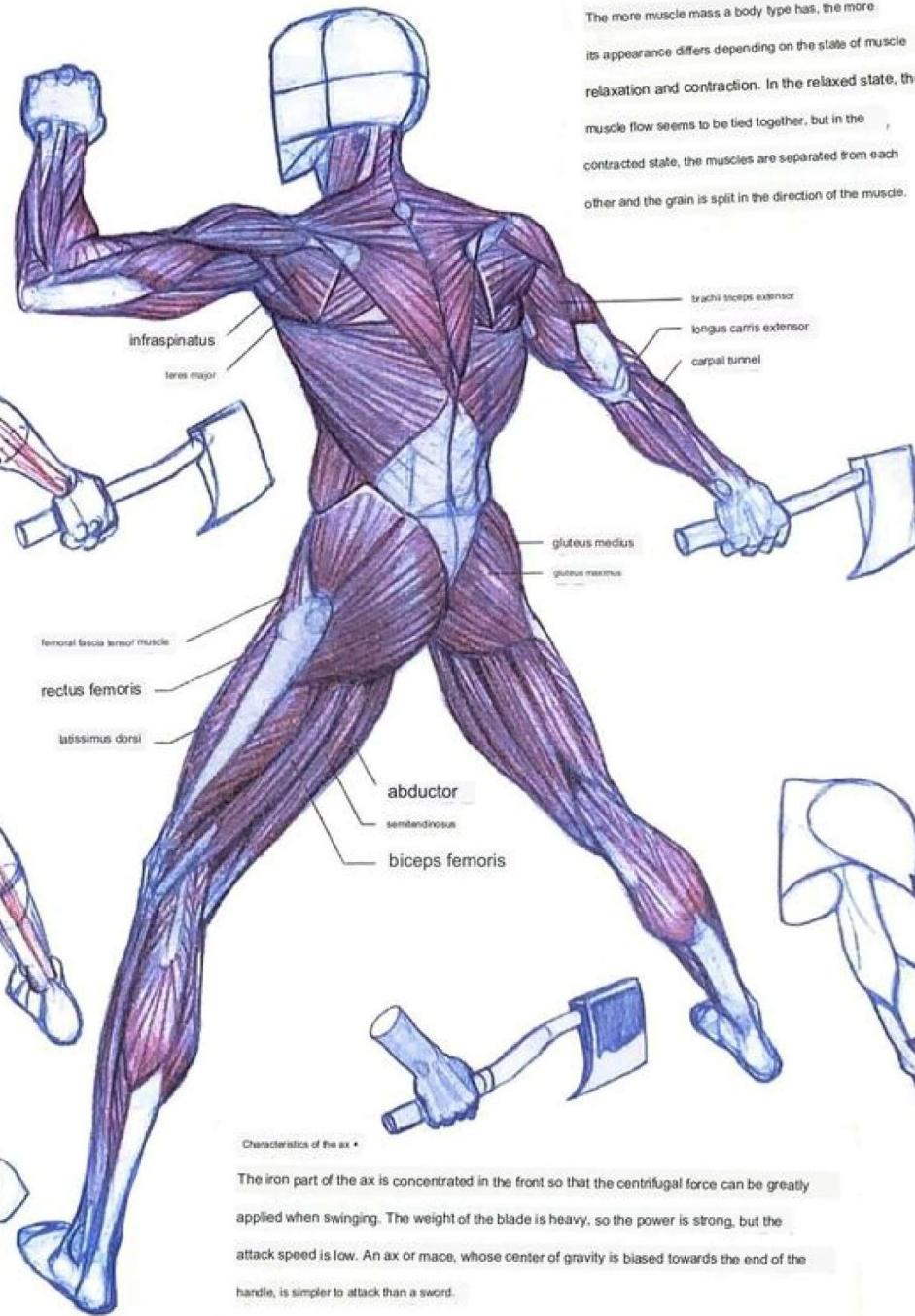
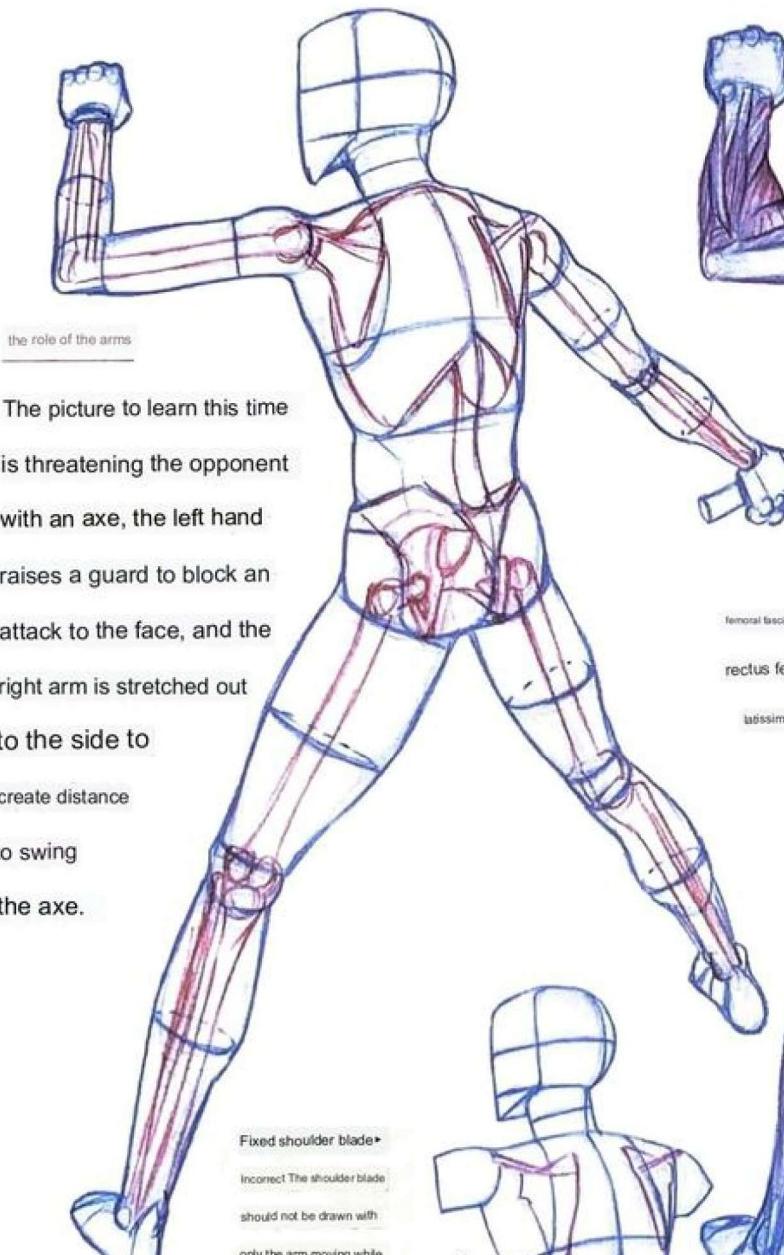


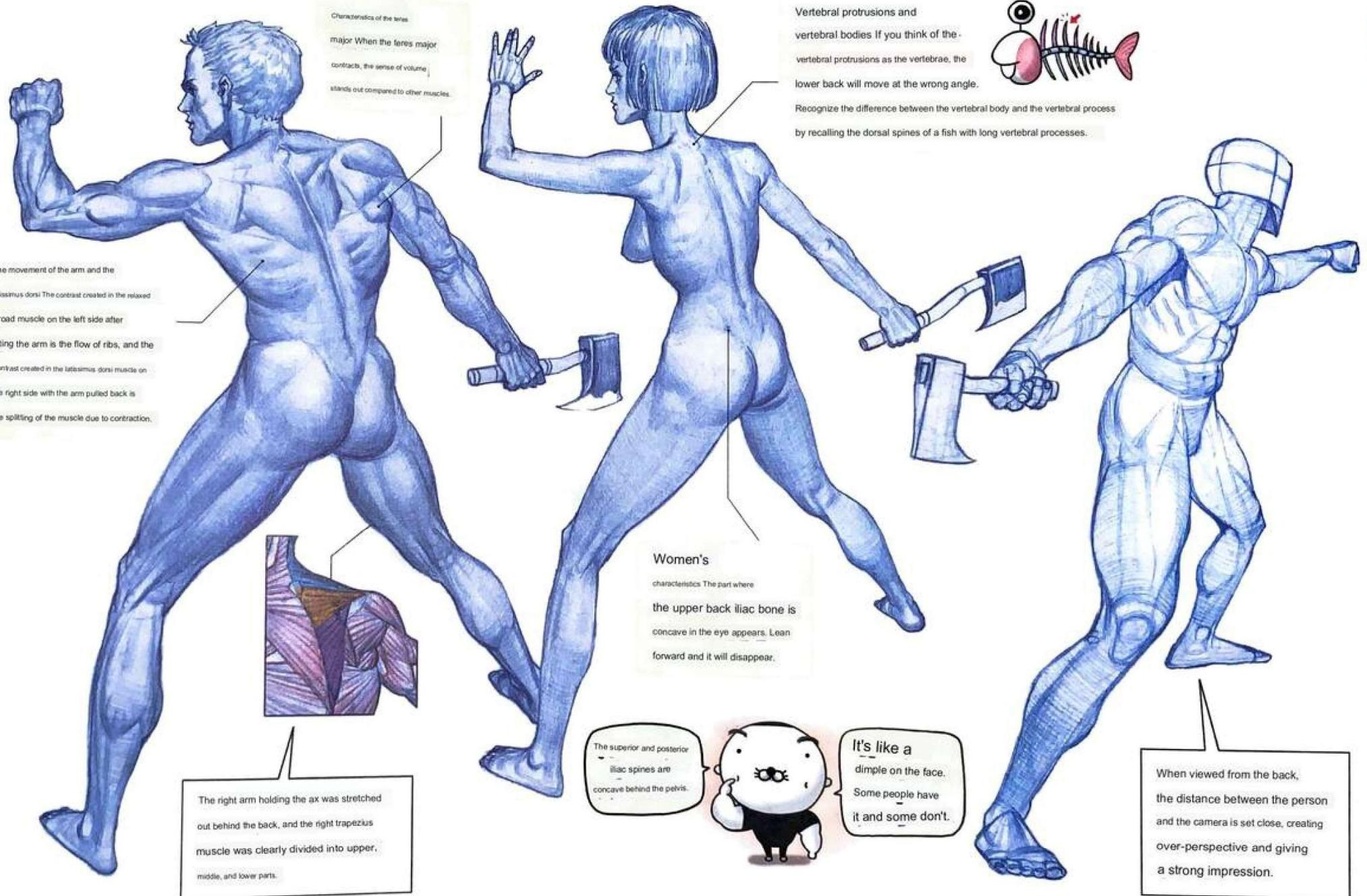
- Rigid flow and unstable center of gravity of the upper body
- If the upper body is erected stiffly without twisting as shown in Figure 1, or if the center of gravity is tilted backward as shown in Figure 2 and is unstable, the dynamic feeling decreases.



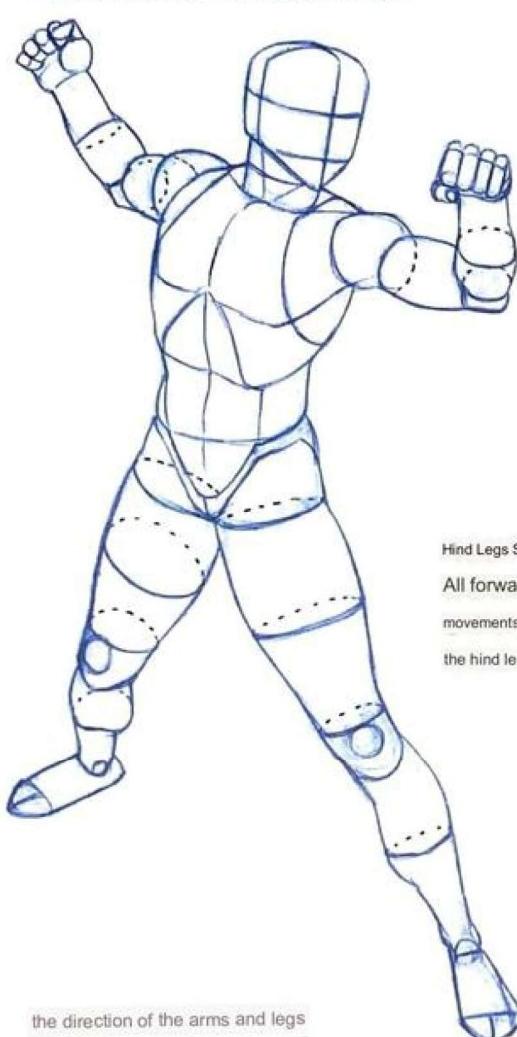


■ Rear view holding an ax



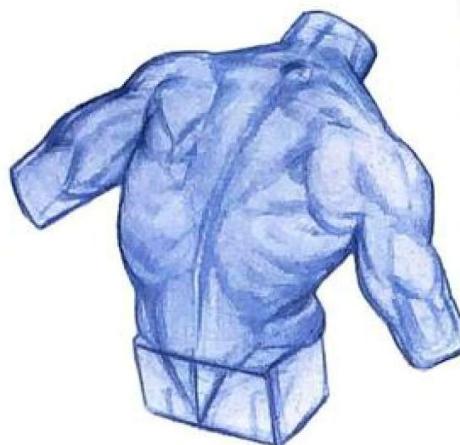


■ Ready to take down with an axe



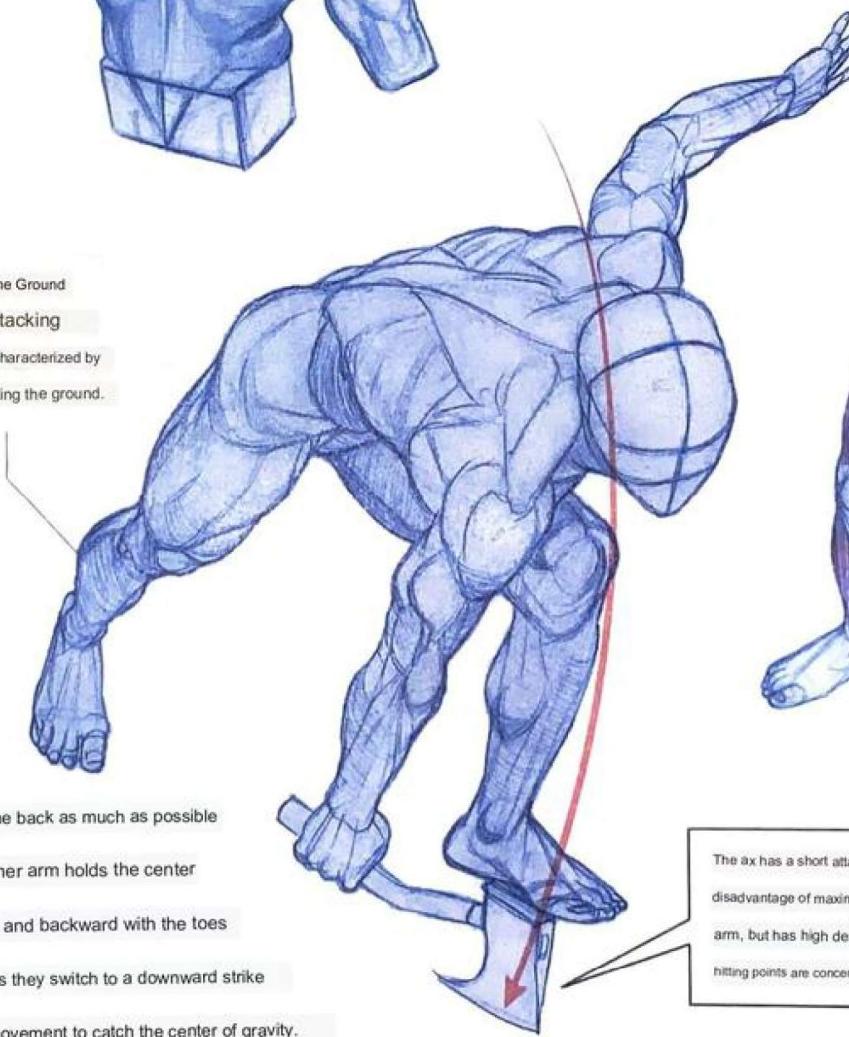
the direction of the arms and legs

In the posture above, the right arm holding the ax is pulled toward the back as much as possible to strike the ax from top to bottom toward the target, while the other arm holds the center of gravity while aiming at the target. The feet are spread forward and backward with the toes facing to the side, and then the direction of the feet faces the front as they switch to a downward strike action. It's because the direction of the toe follows the direction of movement to catch the center of gravity.

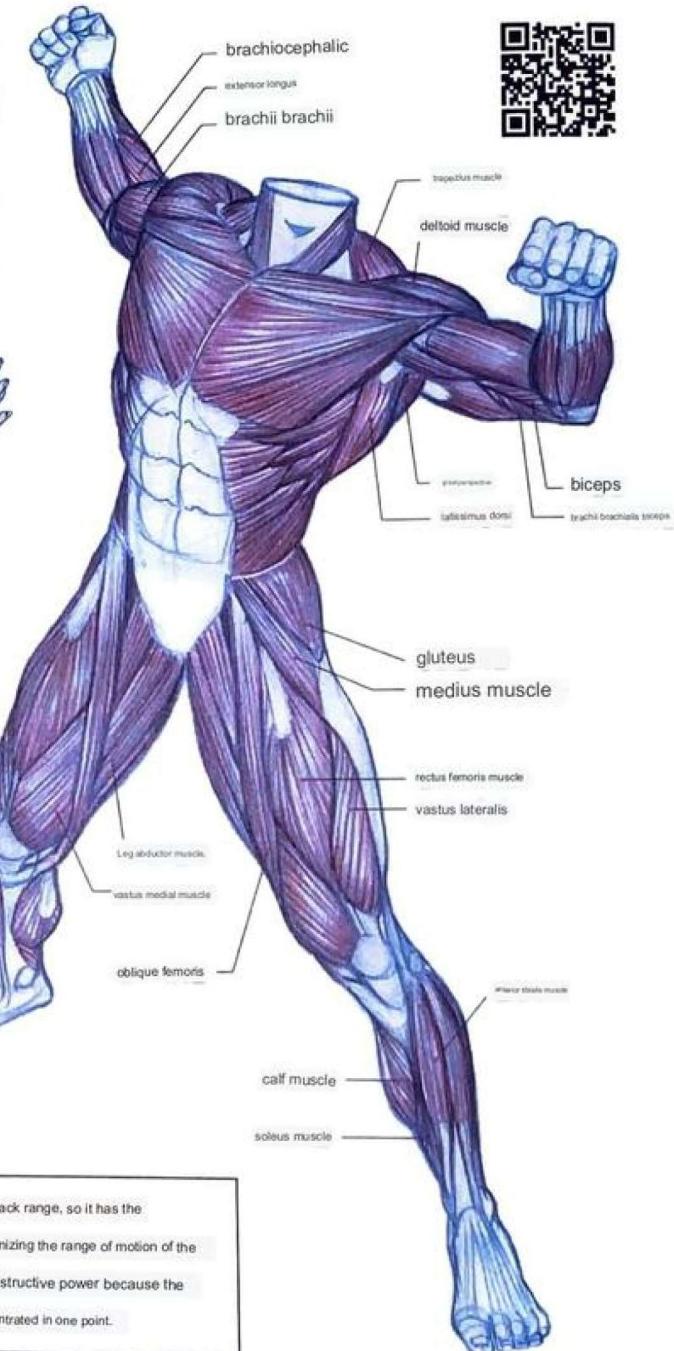


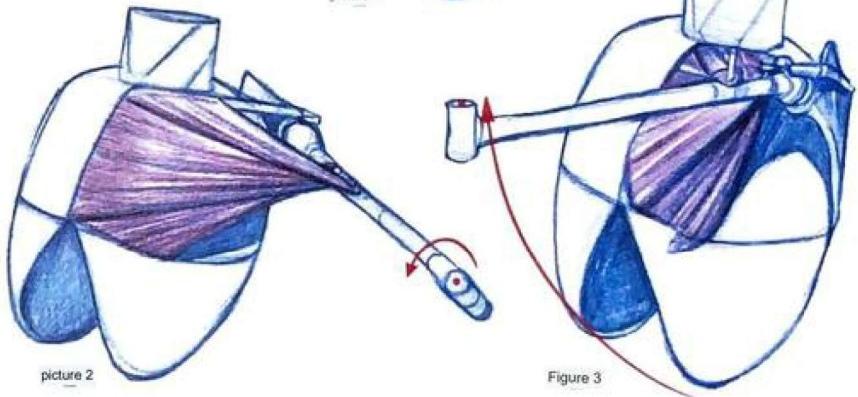
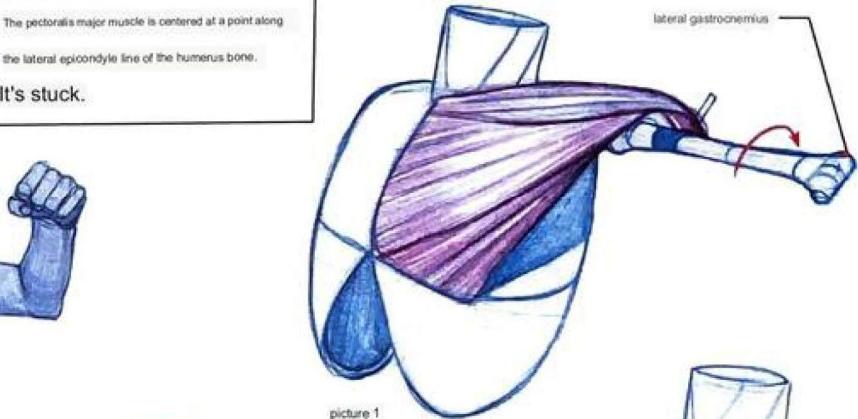
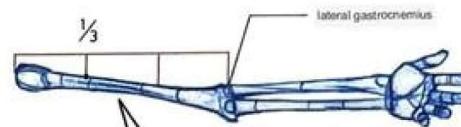
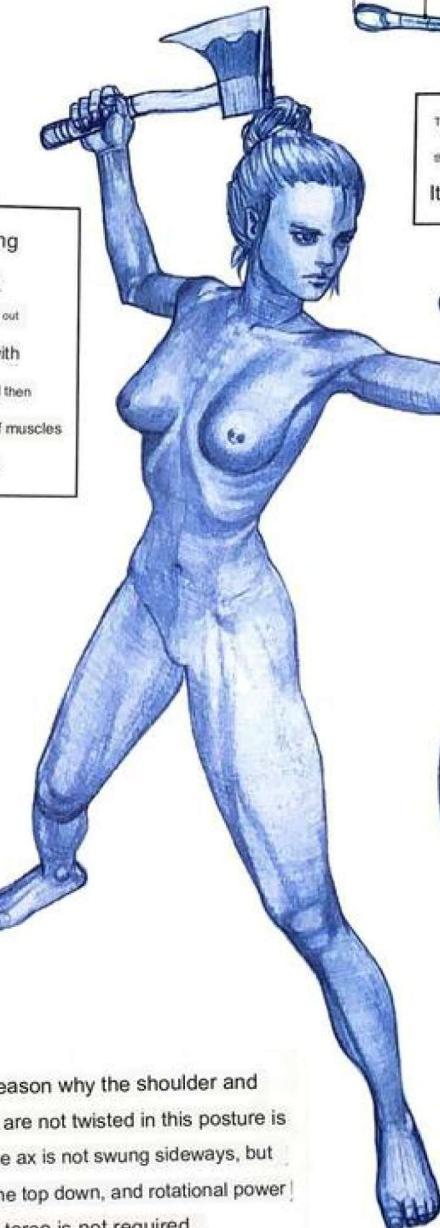
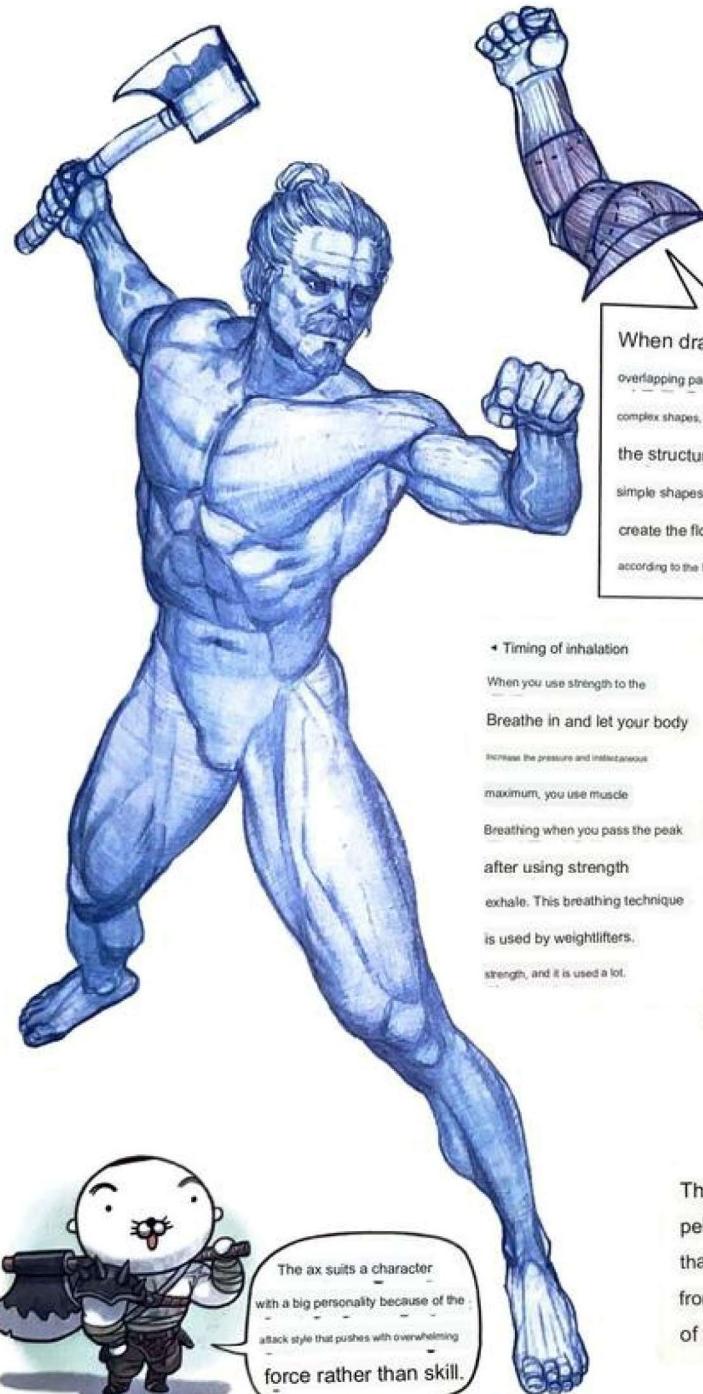
• Back muscles that emphasize masculinity

Out of the prominent back muscles, all muscles except for the erector spinae are used for arm movement, so athletes who use their arms a lot develop their backs. Back muscles are also an important element that emphasizes masculinity.



The ax has a short attack range, so it has the disadvantage of maximizing the range of motion of the arm, but has high destructive power because the hitting points are concentrated in one point.





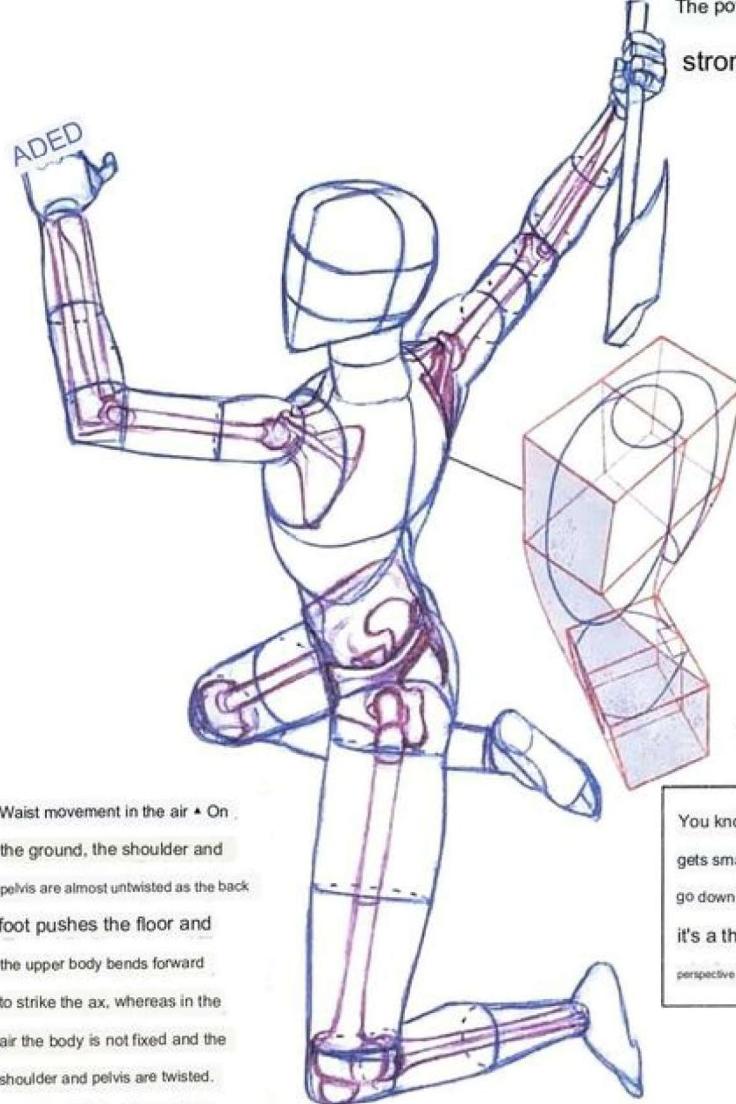
As shown in Figure 1, when the arm is rotated backward with the arm out to the side, the endpoint of the pectoralis major muscle is also passed backward along the lateral epicondyle. As shown in Figure 2, when you rotate your arms out to the side and rotate forward, the endpoints of the pectoralis major muscle are pulled sideways in a twisted state. As shown in Figure 3, when the arms are aligned forward, the distance between the starting point and the ending point becomes closer and the pectoralis major muscle contracts. The posture in the picture on the left holding the ax is the same as in Figure 1, and the arm is moving, so the big chest is in a state where the deltoid muscle is overstretched. It is also the position where the area of the pectoralis major muscle looks the widest.

## ■ Jumping down with an ax

### Advantages and disadvantages of airborne technique

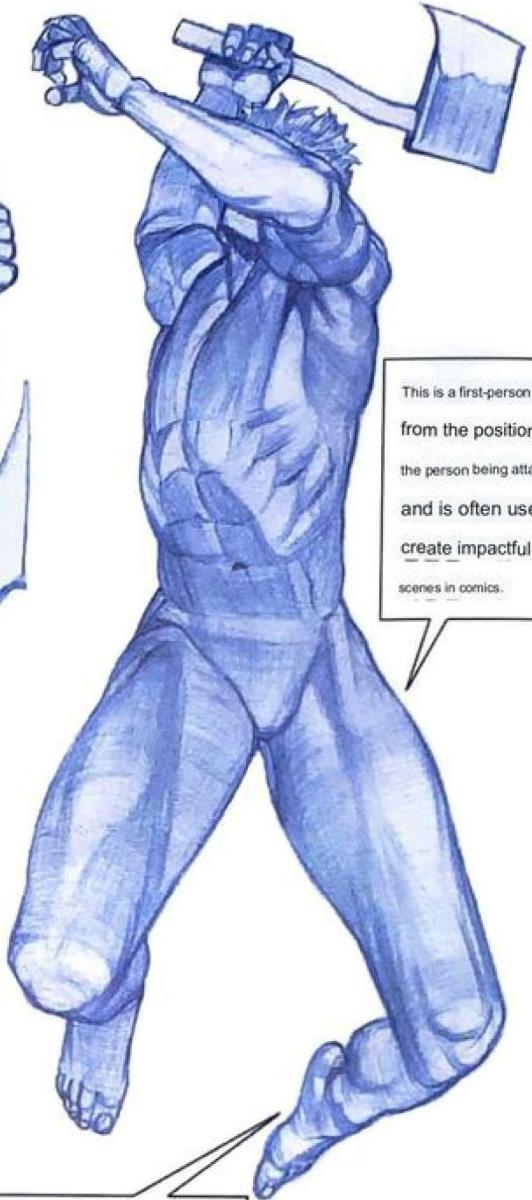
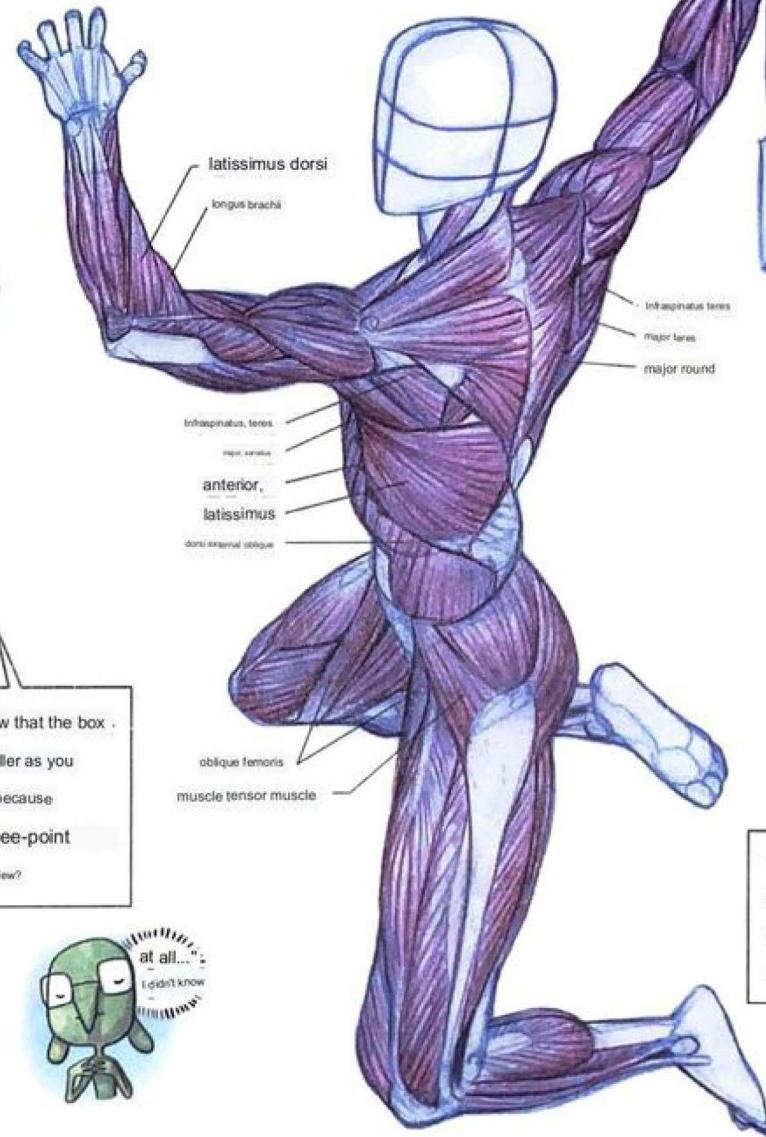
Prepare to strike down an opponent with an ax in the air, with your feet touching the ground.

The power to hit down with the gravitational energy of falling in the air rather than down stronger. The downside is that it's difficult to time the attack.



Waist movement in the air • On the ground, the shoulder and pelvis are almost untwisted as the back foot pushes the floor and the upper body bends forward to strike the ax, whereas in the air the body is not fixed and the shoulder and pelvis are twisted. uses rotational force to pull the outstretched arm forward to strike the axe.

You know that the box gets smaller as you go down because it's a three-point perspective view?



This is a first-person view from the position of the person being attacked, and is often used to create impactful scenes in comics.

Bending your legs in the air creates an angle where your toes converge rather than your calves in a figure 11 line.

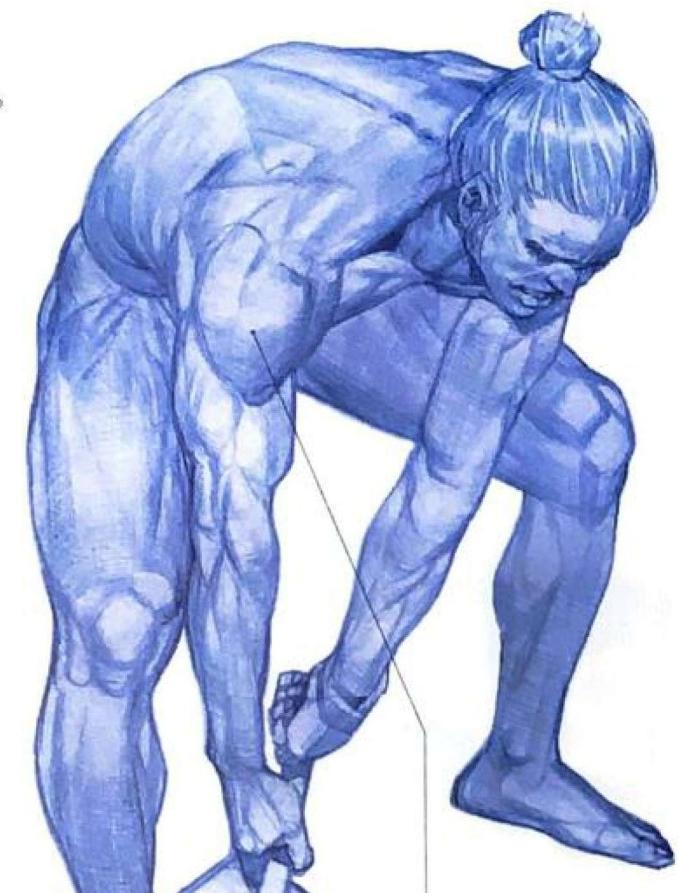
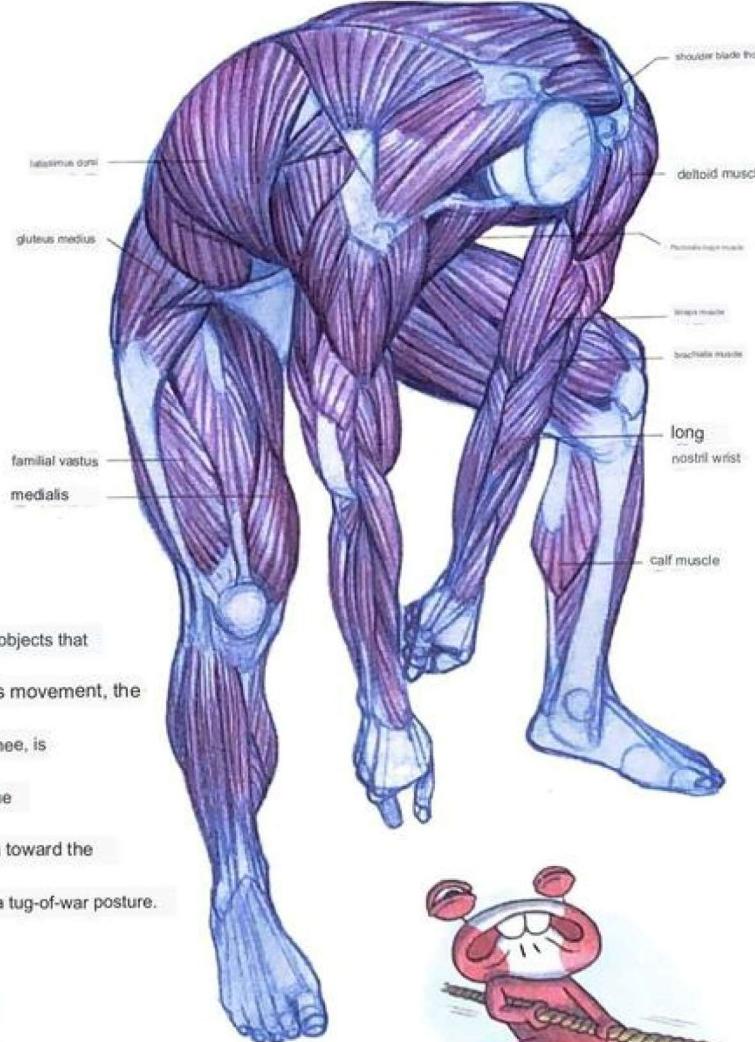


## The posture of lifting the hammer

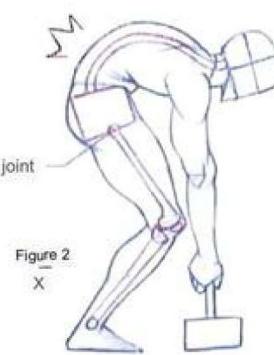
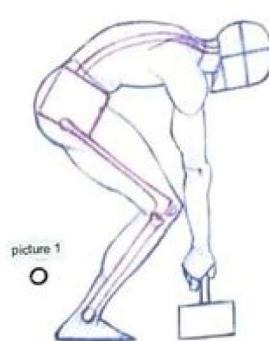


when lifting heavy objects

This is a posture in which the whole body is used to lift heavy objects that cannot be lifted with only the strength of the arms. In this movement, the strength of the lower body, which bends and straightens the knee, is the most important. The wrist flexor muscles contract to grip the object tightly, and the back muscles contract to pull the arm toward the back. If the direction of pulling is forward, it can be applied as a tug-of-war posture.



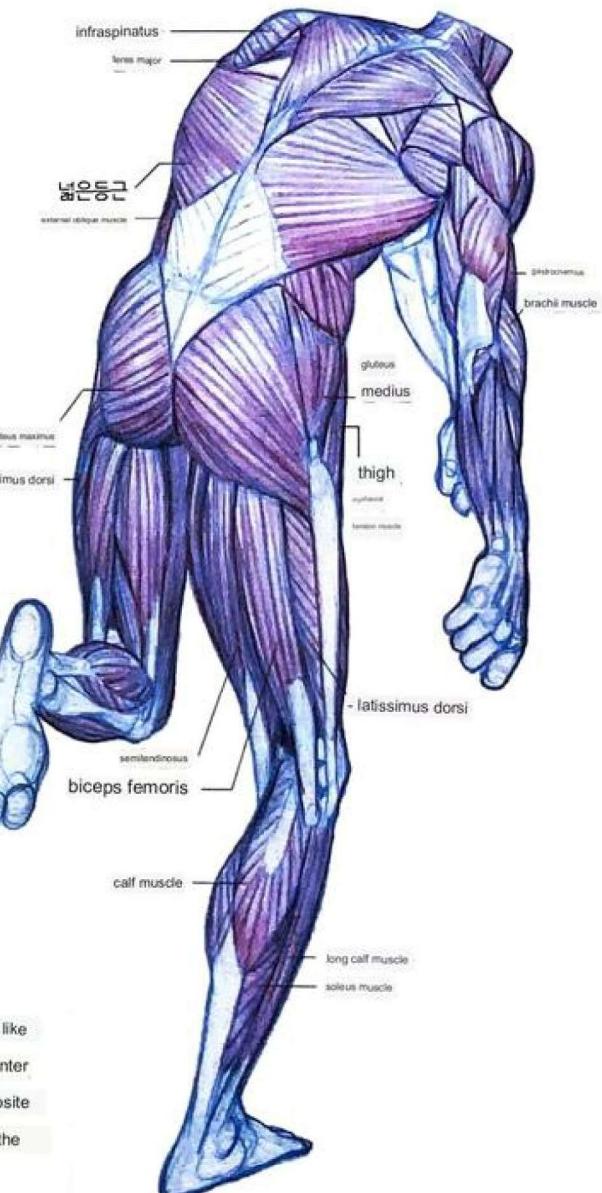
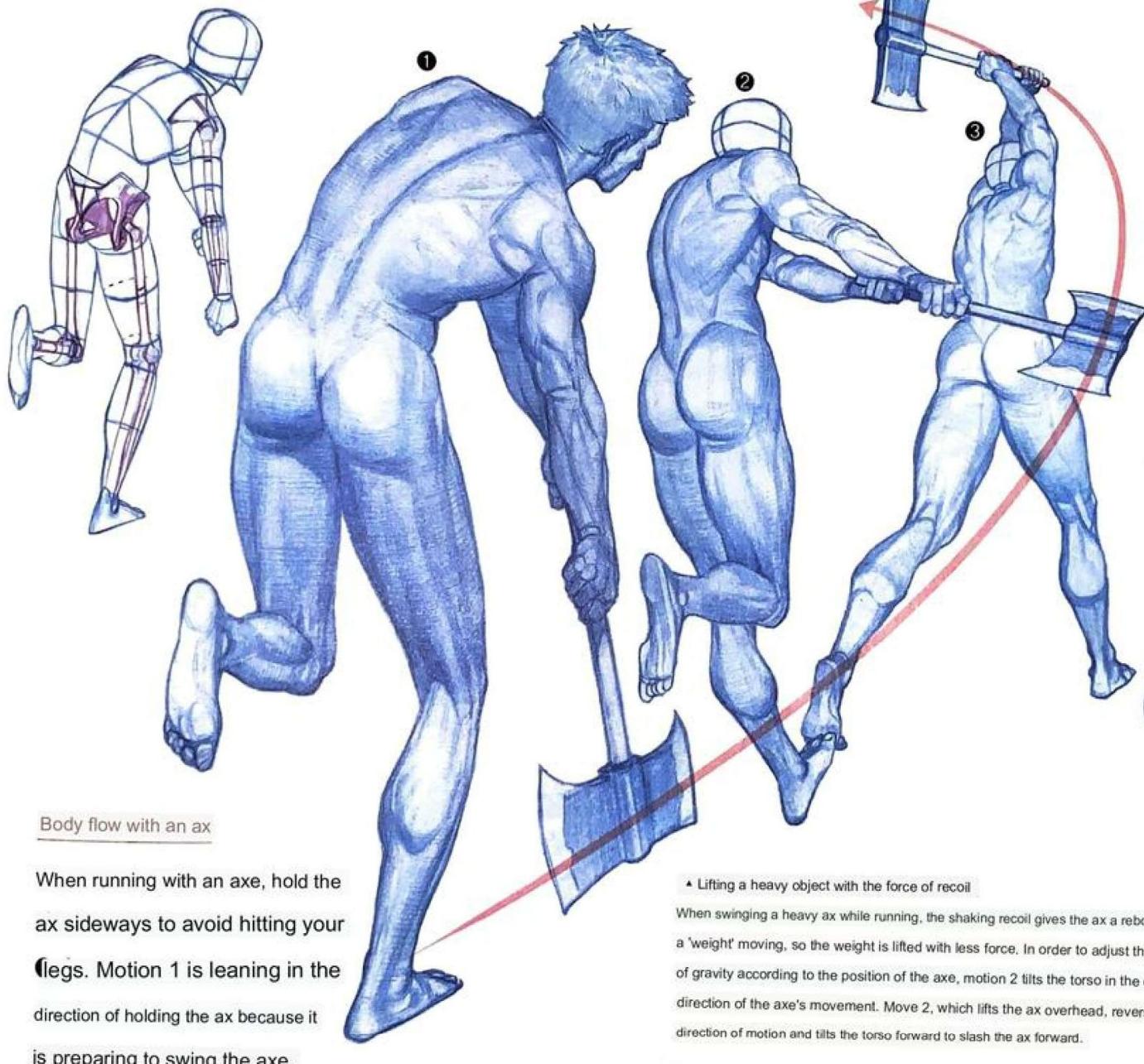
Spacing of shoulder blades maximally apart  
The position of the shoulder, which is relaxed as much as possible by pulling something, goes beyond the range that it can move by itself. The shoulder blades that are connected to the shoulders are also moved forward, so the gap between the shoulder blades is as far apart as possible.



Movement of the hip joint when bending the waist

When expressing this position, be careful not to move the hip joint and not bend forward at the waist, as shown in Figure 2. Since a bundle of nerves passes through the lumbar vertebrae that connects the upper and lower body, the hip joint is used to minimize movement of the waist when bending down.

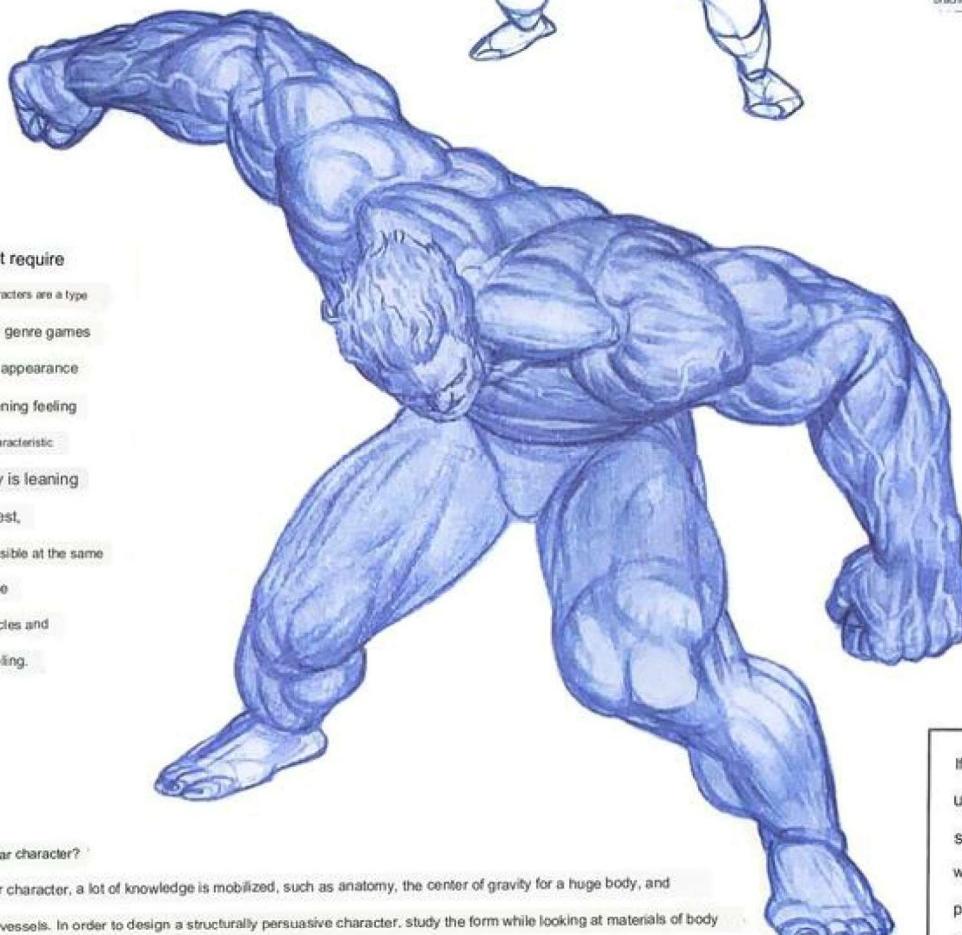
■ Ready to swing an axe



## ■ Muscular character holding a hammer

### Proportion of a muscular character

When drawing a muscular character that deviates from the basic body shape, it should be drawn in a different proportion than normal figures. In addition to the sense of volume, you need to give a difference from the skeleton, and after learning the basic skeleton, you should practice the skeleton and volume of various body types based on this.

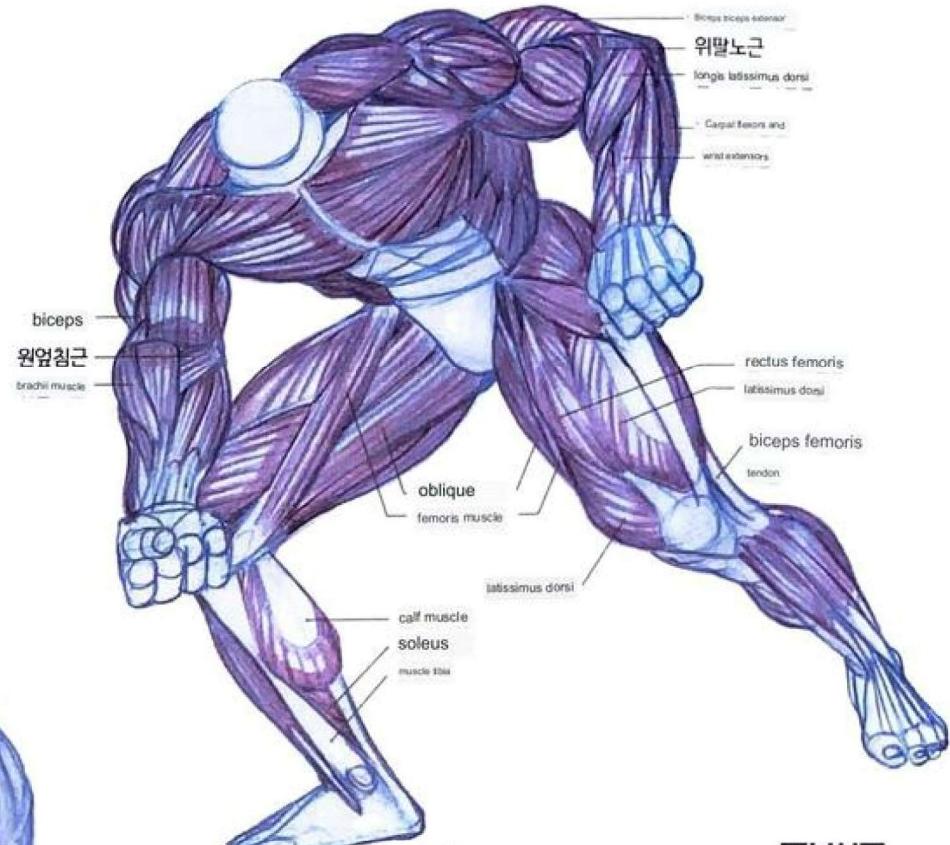
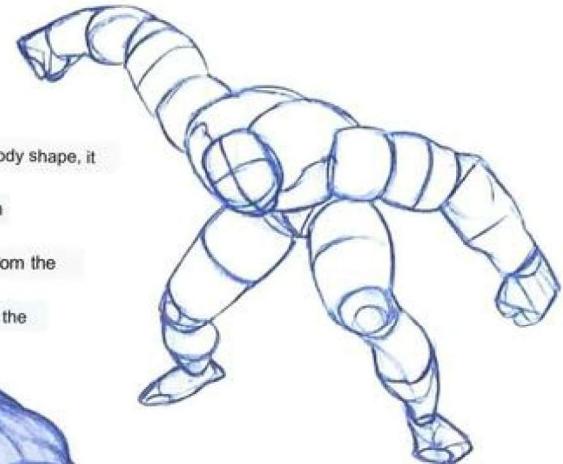


### Characters that do not require weapons

Large, muscular characters are a type that must appear in action genre games or cartoons because their appearance gives them a more threatening feeling than any other weapon. As a characteristic of the posture, the body is leaning forward, so the back, chest, and shoulder muscles are visible at the same time, emphasizing the huge thickness. The cracked muscles and veins add to the strong feeling.

### How to draw a good muscular character?

In order to draw a muscular character, a lot of knowledge is mobilized, such as anatomy, the center of gravity for a huge body, and the location of major blood vessels. In order to design a structurally persuasive character, study the form while looking at materials of body types with developed muscles, such as bodybuilders, and apply deformation based on this, rather than drawing with imagination.



If a large, muscular character uses a weapon, a bulky weapon such as a greatsword, ax or warhammer will do just fine. On this page, I expressed the stance of taking down with a heavy warhammer.



The position of the hand holding the handle

As mentioned earlier, the weight of an object is determined by the posture of the character holding the object in the picture. In the pose of this figure, the position of the hand holding the warhammer is the most important factor in conveying the sense of weight. Instead of holding the end of the handle with both hands, one hand is holding the warhammer head, creating an effective posture for lifting heavy objects. you can take

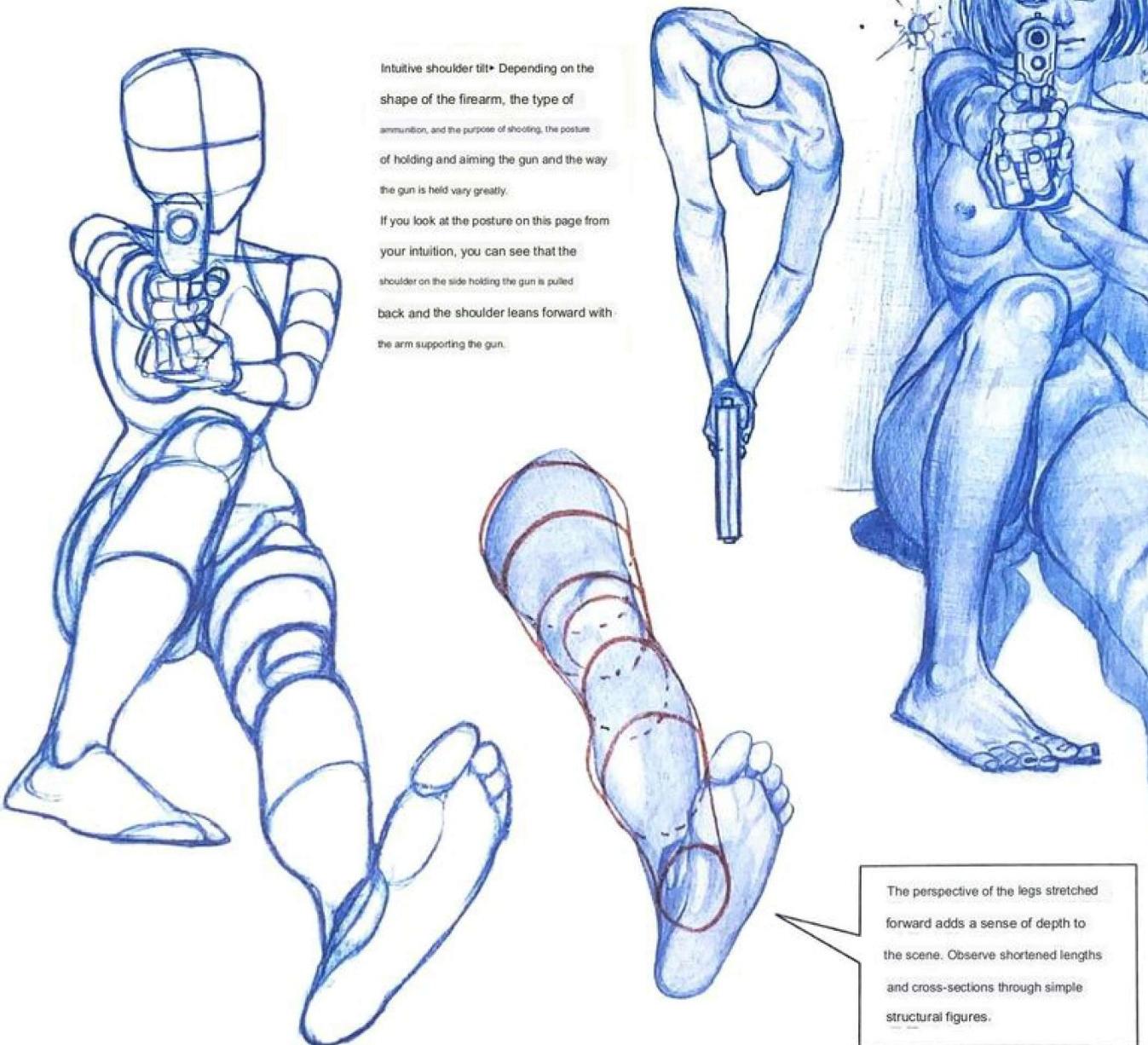


Wrinkles of the bent arm  
The brachii brachii muscle and the latissimus  
carpal extensor muscle are bundled  
together, and when the arm is bent,  
the crease rides on the brachioradialis muscle.  
The more the muscle develops, the higher  
the direction of the wrinkles.



If a normal-sized person is holding a large warhammer, he may not be able to lift the warhammer, or the warhammer will feel light weight. In comics, rather, strong characters are expressed through such directing.

#### ■ Gun-holding posture



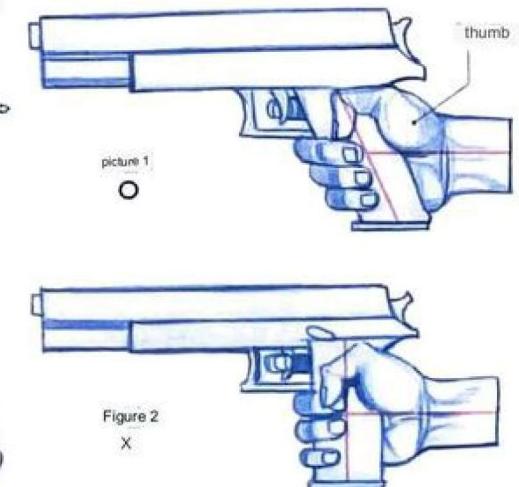
Intuitive shoulder tilt! Depending on the shape of the firearm, the type of ammunition, and the purpose of shooting, the posture of holding and aiming the gun and the way the gun is held vary greatly.

If you look at the posture on this page from your intuition, you can see that the shoulder on the side holding the gun is pulled back and the shoulder leans forward with the arm supporting the gun.

The perspective of the legs stretched forward adds a sense of depth to the scene. Observe shortened lengths and cross-sections through simple structural figures.

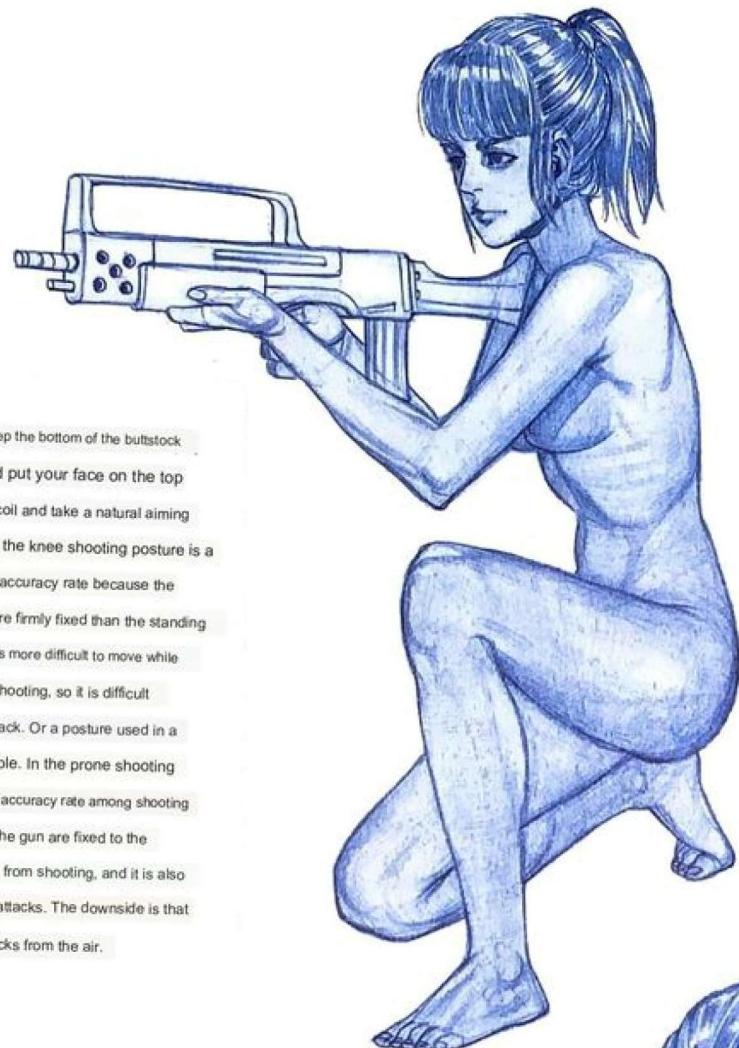
#### Create a three-dimensional pose

Since it is difficult to create a three-dimensional effect when the figure is facing the front, one leg was extended to give a sense of depth, and the other leg was bent with the knee inward to create a feminine gesture. There was also a method of gripping the gun with both hands extended equally, but to avoid monotony due to symmetry, one arm is bent to support the bottom of the gun. Among the body, hair is the only element that allows you to feel the movement of the body and the direction of the wind, so it creates a dynamic feeling by expressing the flying hair. If the hair is fixed, the motionless posture it becomes



The handle of a gun tilted in an oblique direction

- ▲ The handle of a gun is in the shape of an oblique line aligned with the angle tilted obliquely by the top of the thumb.
- If the handle is vertical, you will have to strain your hand to hold the gun horizontally, putting you in an uncomfortable position.



## Knee Shoot Stance\*

When shooting with a rifle, keep the bottom of the buttstock against your shoulder and put your face on the top of the buttstock to absorb recoil and take a natural aiming position. It can be said that the knee shooting posture is a shooting posture with a high accuracy rate because the lower body and the ground are firmly fixed than the standing shooting posture. However, it is more difficult to move while shooting than standing and shooting, so it is difficult to react to the opponent's attack. Or a posture used in a space where cover is possible. In the prone shooting posture, which has the highest accuracy rate among shooting postures, both arms holding the gun are fixed to the ground, so there is little recoil from shooting, and it is also possible to hide from enemy attacks. The downside is that it has a slow response to attacks from the air.



## Shooting posture in creative works

Not all the shooting positions you see in cartoons or movies are based on realistic theory. Trying to express a shooting stance within a realistic range can be an obstacle to creative storytelling. Unless it is a professional action genre related to guns, as long as you have the basic shooting action of keeping your arms stretched out and holding a pistol at eye level, you can try various movements depending on the story or direction. This allows creative scenes to be created.



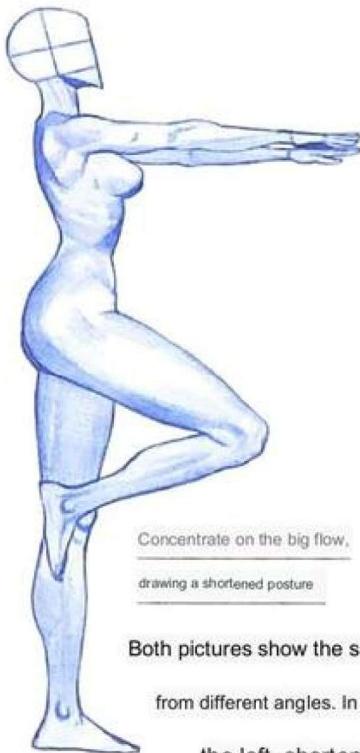
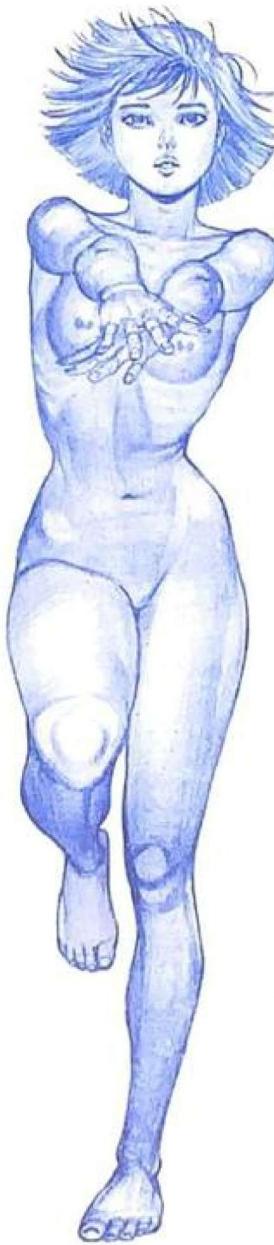
## Impromptu shooting stance\*

It looks similar to the prone shooting position, but it is not classified as a prone shooting position because the gun is not held with both hands. Assuming a situation in which a pistol is suddenly pulled out, it is an impromptu posture in which you give up aiming and only hold the shooting direction with one hand. It is used to create a sense of urgency and speed.



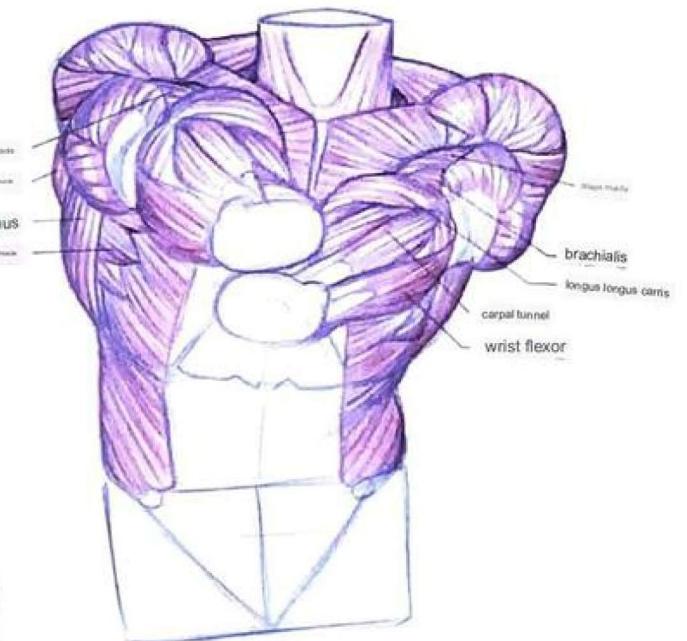
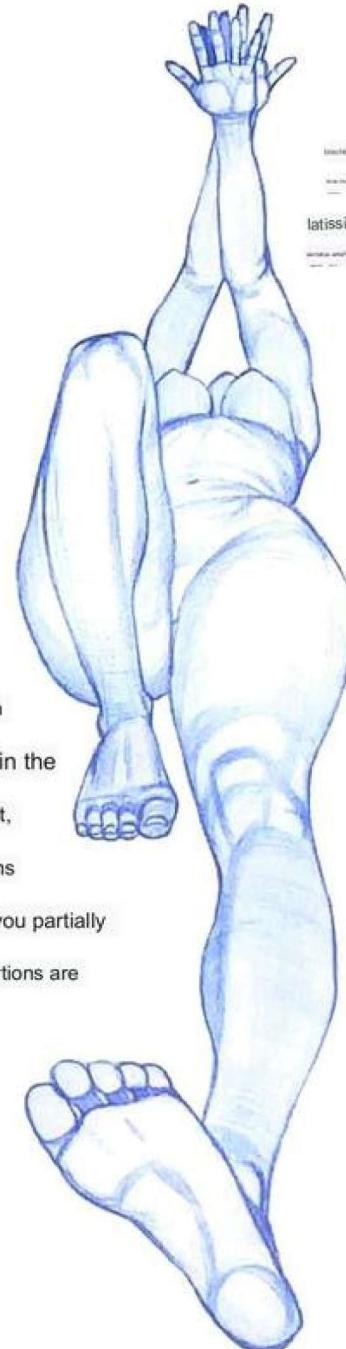
◎ Shortened posture

■ Arms and one knee extended forward

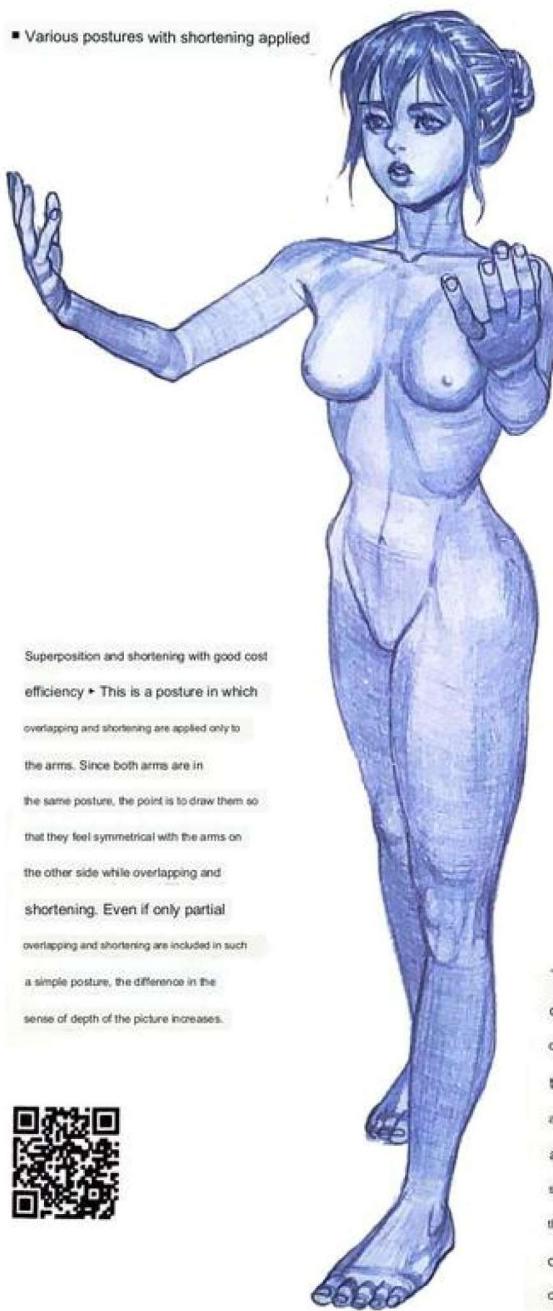


Concentrate on the big flow,  
drawing a shortened posture

Both pictures show the same pose  
from different angles. In the picture on  
the left, shortening occurs in the  
arms and bent legs, whereas in the picture on the right,  
shortening occurs in the entire body except for the arms  
and bent legs. When drawing a shortened pose, if you partially  
draw from the nearest part, the overall flow and proportions are  
more likely to be wrong. Therefore, it is  
necessary to understand the structure in the order  
in which it extends from the body, and catch the  
big flow first. Rather than concentrating on small  
units like the detailed flow of muscles, try  
practicing broadening your horizons through drawing.



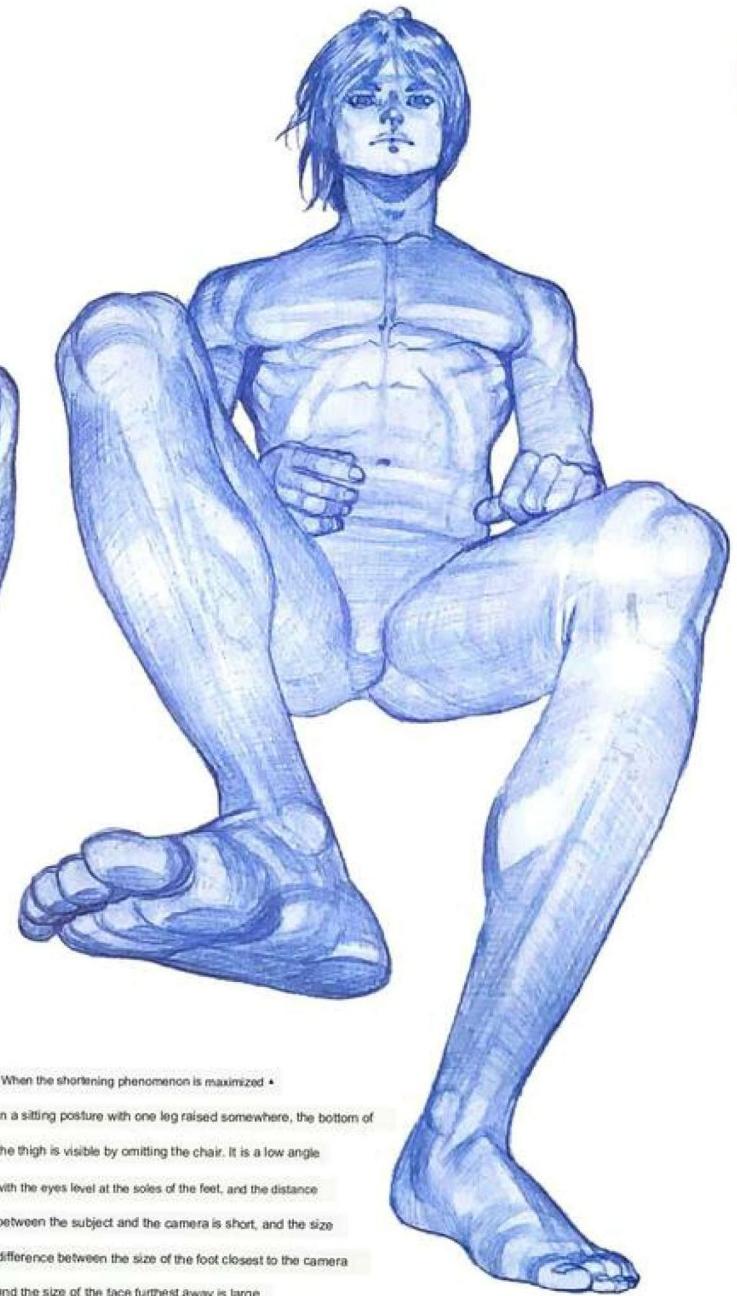
## ■ Various postures with shortening applied



Superposition and shortening with good cost efficiency ▶ This is a posture in which overlapping and shortening are applied only to the arms. Since both arms are in the same posture, the point is to draw them so that they feel symmetrical with the arms on the other side while overlapping and shortening. Even if only partial overlapping and shortening are included in such a simple posture, the difference in the sense of depth of the picture increases.



The point of the posture that takes precedence over shortening> It is the posture of sitting against the wall. Bent legs support the body from slipping, and arms are raised behind the head for support with a hand as a pillow. The upper body is standing and the lower body is lying down, so the waist is bent forward. Shortness occurs on outstretched legs and hands resting on the thighs.



When the shortening phenomenon is maximized ▶ In a sitting posture with one leg raised somewhere, the bottom of the thigh is visible by omitting the chair. It is a low angle with the eyes level at the soles of the feet, and the distance between the subject and the camera is short, and the size difference between the size of the foot closest to the camera and the size of the face furthest away is large.

## ■ posture in water

A posture that emphasizes the flow of women

Women's flexible movements and curves

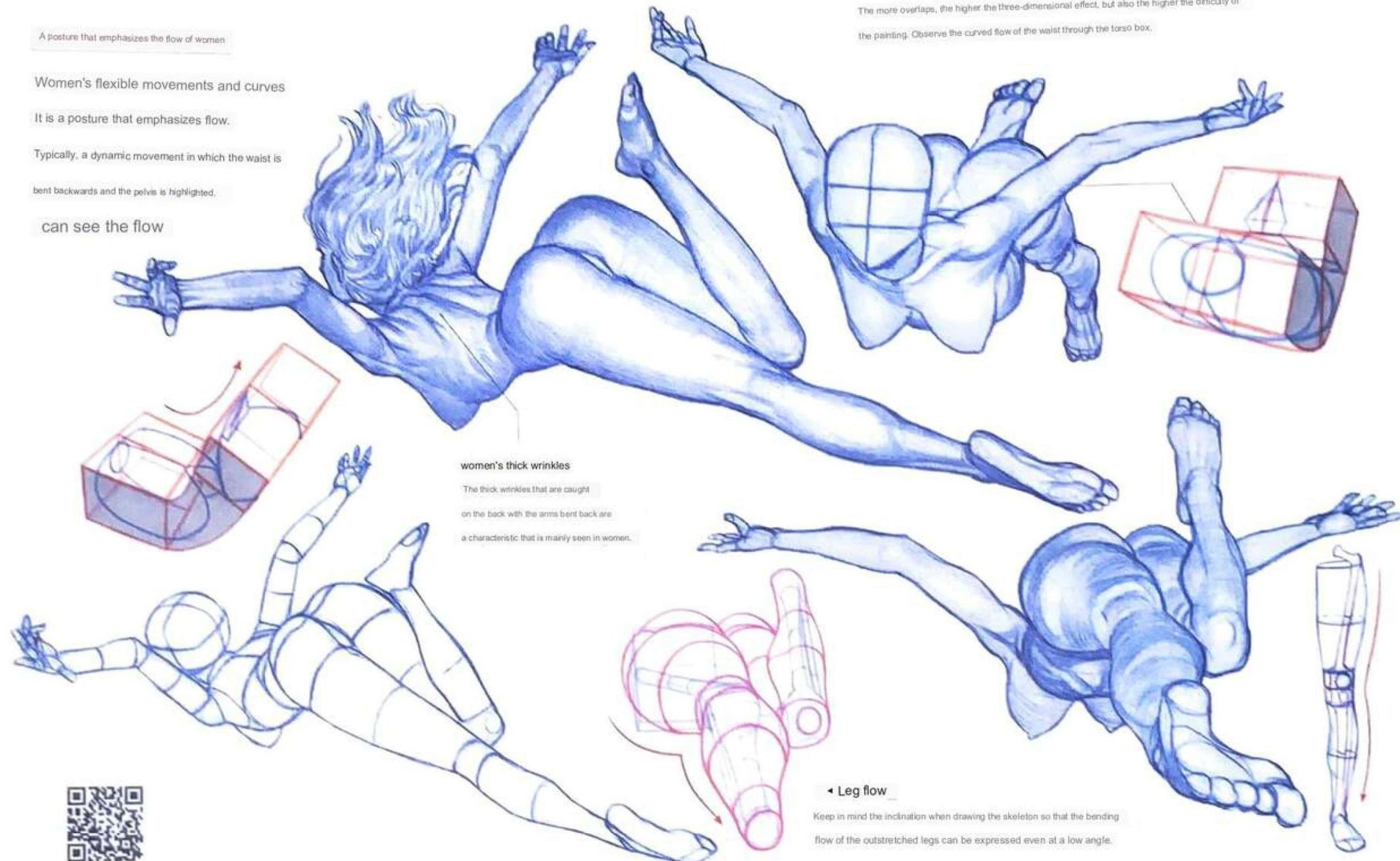
It is a posture that emphasizes flow.

Typically, a dynamic movement in which the waist is bent backwards and the pelvis is highlighted.

can see the flow

Drawing through penetration ▶

The more overlaps, the higher the three-dimensional effect, but also the higher the difficulty of the painting. Observe the curved flow of the waist through the torso box.



## ■ Dancer's posture

drawing in reverse order

If you draw from the part closest to the screen, the hidden part will be omitted, resulting in poor structure.

If you draw around the torso, you can draw even the hidden parts to create a solid structure. For example, when drawing a shortened arm, draw it in the order of 'shoulder-elbow-wrist-hand'

That's it.

Understanding the structure through

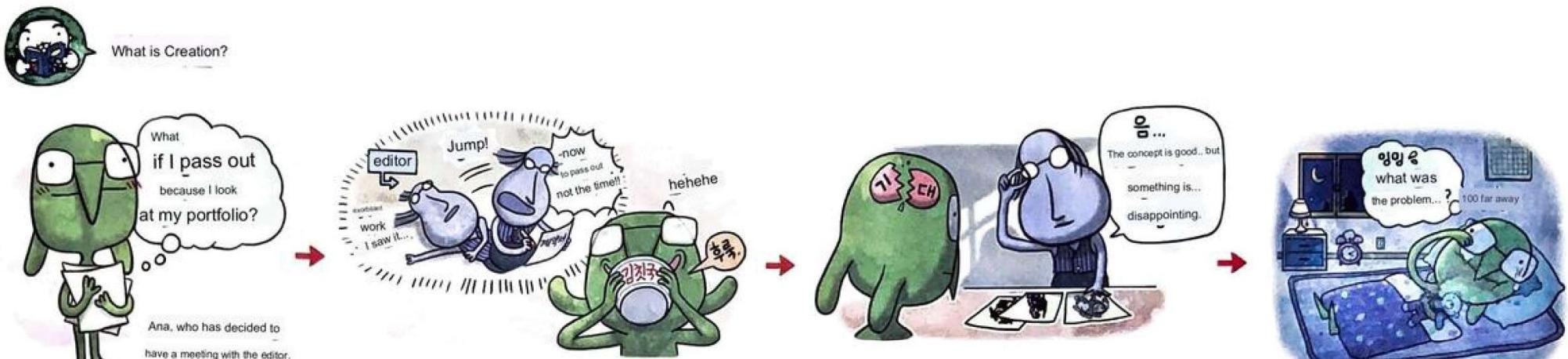
penetration ▶ Looking at the figure, the upper body is hidden by the pelvis, but let's look at the structure through the torso box, which is seen through penetration.



## Drawing characters of various genres

When cooking, no matter how well you make the seasoning, if the ingredients aren't fresh, they won't taste good. Likewise, no matter how original the concept is, if the human body of the character wearing the item collapses, the overall quality of the picture will look poor. In this way, trying to deform and adding various designs while studying the human body has not yet been done properly is a way to study out of order. In addition, 'creation' is not to create a design that has never existed before, but to recombining existing elements to give a new feeling. In order to draw these existing elements well, 'imitation' should be practiced before creation. A human observes more closely when looking at a human being of the same species than when looking at another object, and when drawing a human being, the same finer observation is exercised. Therefore, rather than practicing by looking at non-human objects, studying the human body is the most effective way to practice drawing to develop observational skills. When the structure of the human body can be expressed to some extent using this principle, it becomes relatively easy to draw objects other than the human body. In Chapter 1, we learned about the proportions and volume of the human body and the driving principles of joints through figure drawing, and in Chapters 2 and 3, we learned about the principles and structure of muscles through anatomy and materialized the flow of the human body. In Chapter 4, we looked at how this information is actually applied in various movements. In this last chapter, Chapter 5, we will look at how to express characters of various genres, such as superheroes, fantasy world races, armor and mechanics, based on human anatomy. In addition, we will study how to find and apply big flows and patterns in complex and colorful action compositions through illustrations.





It is full of anticipation.

But the reality was grim.



After a while, Ana takes on the challenge again.

Oops... is this deja vu?!



The editor's acclaimed picture

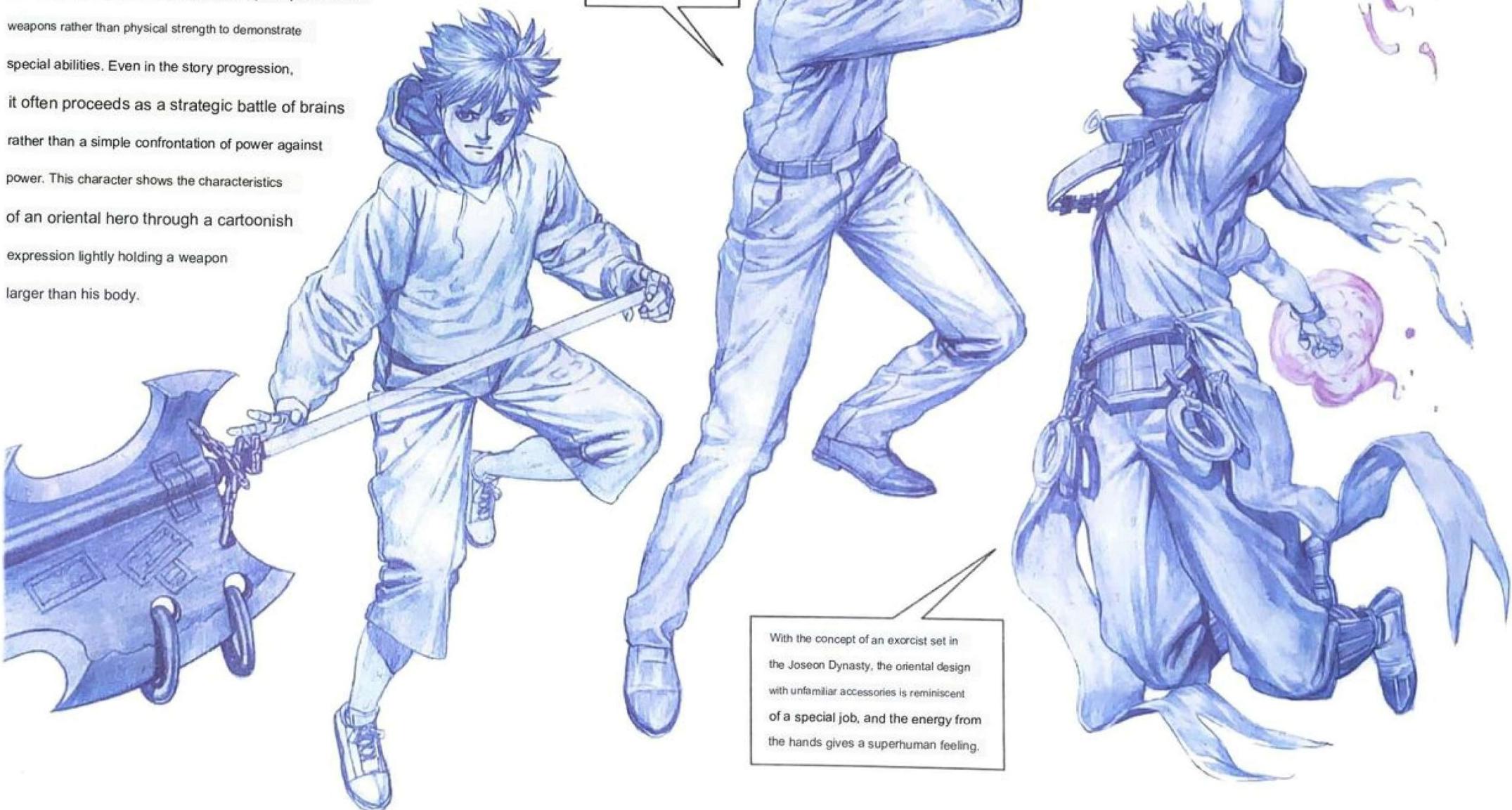
It was the hand of Lak Hee-sam.

## 1 Drawing a hero character

### ■ Oriental hero

Characteristics of an oriental hero

Superhero characters in oriental cartoons are often set as boys and girls or ordinary people of normal body shape. It uses weapons rather than physical strength to demonstrate special abilities. Even in the story progression, it often proceeds as a strategic battle of brains rather than a simple confrontation of power against power. This character shows the characteristics of an oriental hero through a cartoonish expression lightly holding a weapon larger than his body.





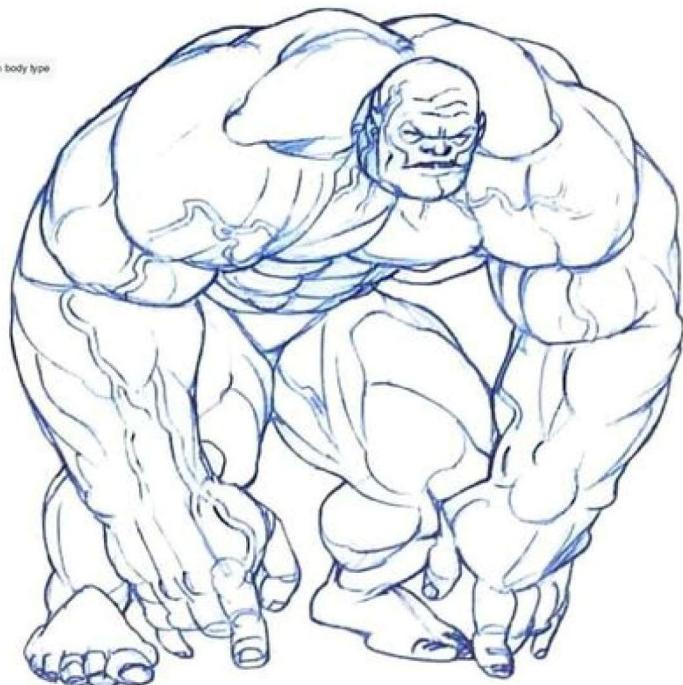
Characteristics of American superhero comics

American comics' superheroes, who represent the West, usually have muscular bodies and wear costumes made of spandex. As a result, the silhouette of the human body is revealed as it is on the outside, and dynamic directing focused on movement is often used to emphasize the flow of the human body. Most of the characters are wearing masks, so emotions or messages are conveyed through gestures rather than facial expressions. The story is clearly composed of good and evil, and a clear confrontation is formed in a dichotomous way.

superhero body type



Villain body type

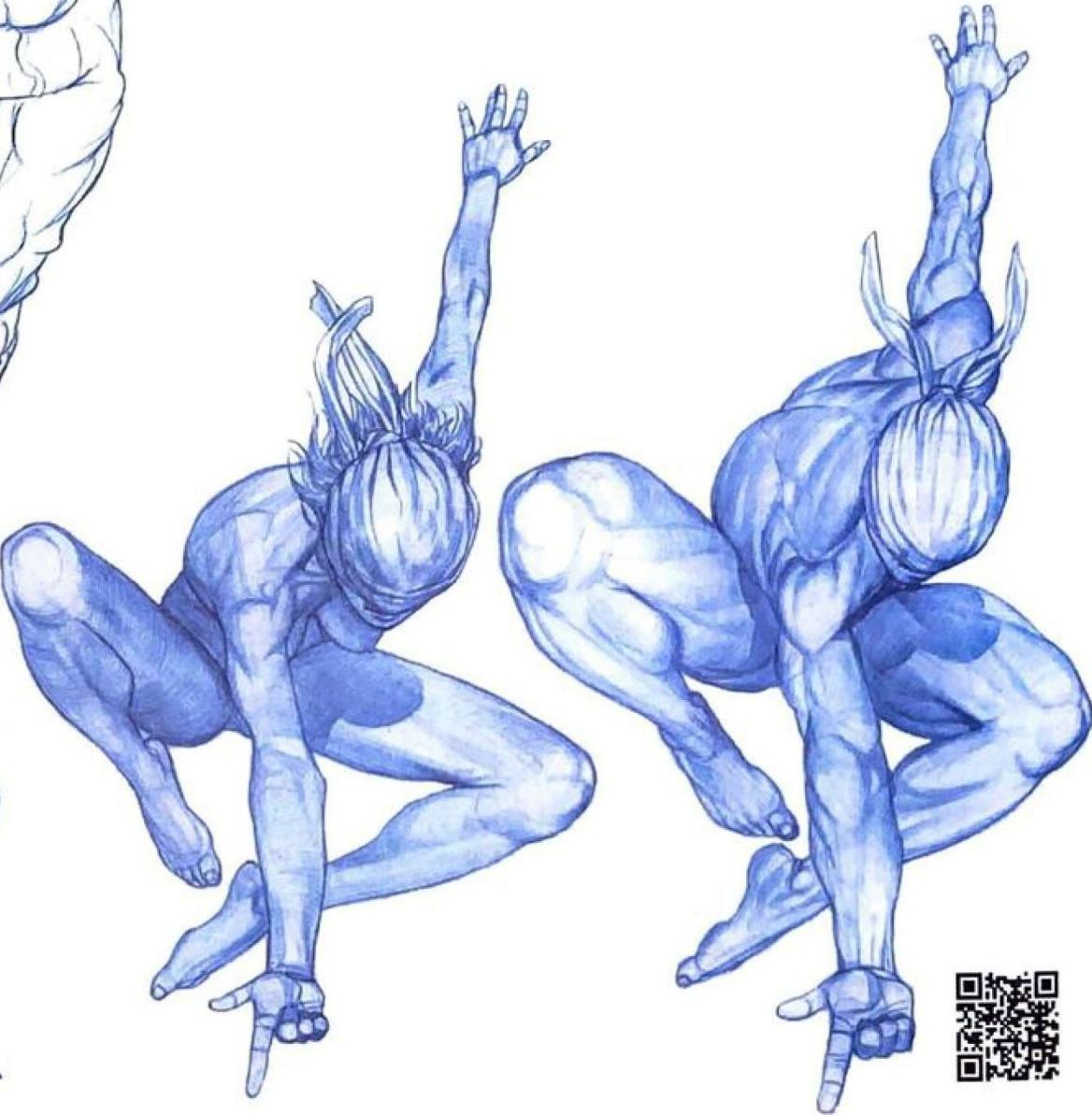


The character created by Dongse▼

If you look at the dynamic air battles of the characters on the left page, you can see that the characters are performing gymnastic-like actions. In this way, expressing various characters through the movements of the characters can be seen as a characteristic of American superhero comics. As shown in the picture below, a basic understanding of the human body is essential in order to draw dynamic movements.



antihero body type



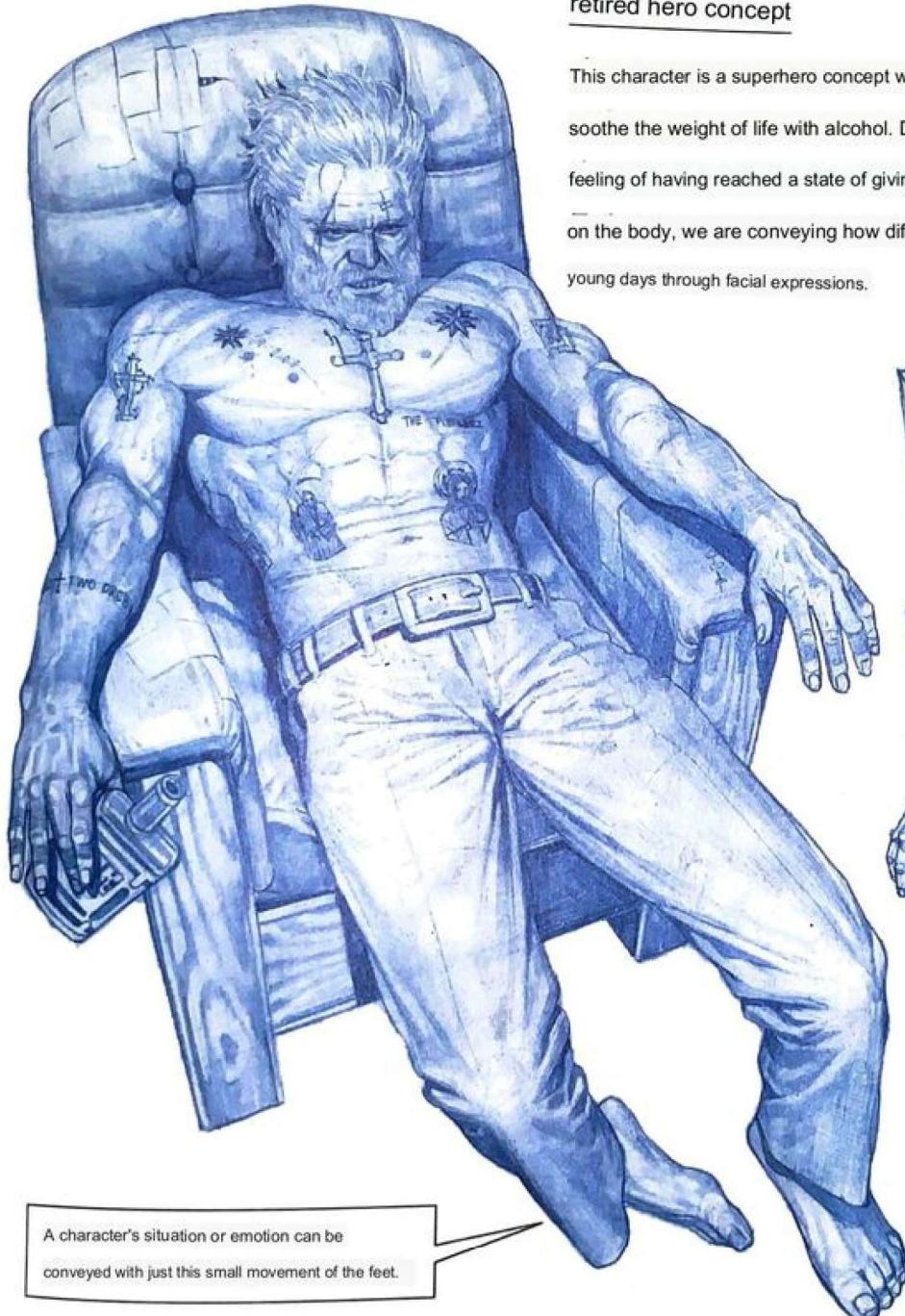
The body size difference between hero and villain ▶

If the main character's physical ability is too great, the story development can be simplified, so most of the superheroes who become the main characters have a body type close to normal people. On the other hand, villains emphasize strength rather than brains, so they are usually drawn as characters with a muscular body with deformation. As shown in the picture above, a character with huge muscles has the characteristics of a character whose movements are closer to that of a gorilla than a human due to the weight of the muscles.

An antihero whose boundaries between hero and villain are ambiguous ▶

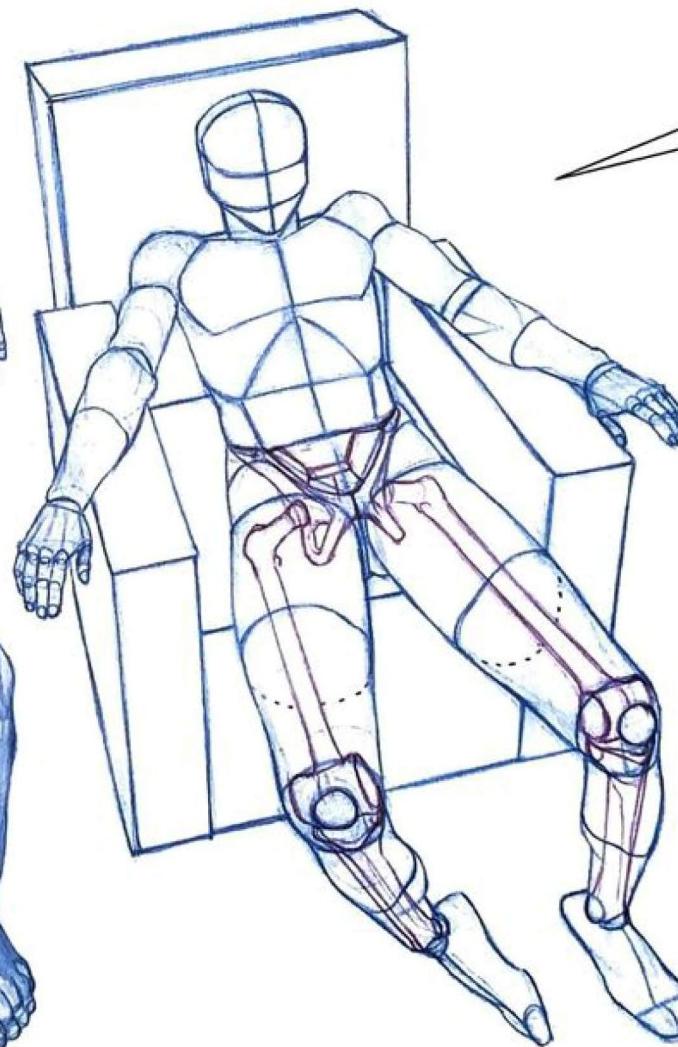
This character has a muscular body that is halfway between the two pictures above. It is often used in the role of going back and forth between hero and villain, and it breaks the story that has been simplified with excessive good and evil composition. As the line between hero and villain is blurring in modern times, the popularity of dual superheroes is increasing.



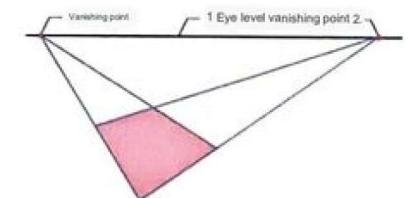


### retired hero concept

This character is a superhero concept with self-healing ability, and has lived many times longer than normal people, soothe the weight of life with alcohol. Dongse, who is spread out on a worn-out sofa like himself, gives a feeling of having reached a state of giving up beyond the boredom of life. Through the many scars and tattoos on the body, we are conveying how difficult life was in the past, and we wanted to express the toughness of the young days through facial expressions.



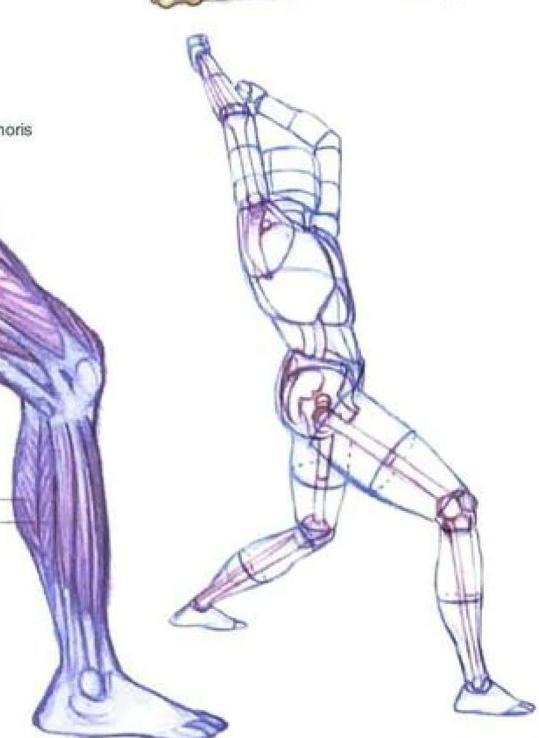
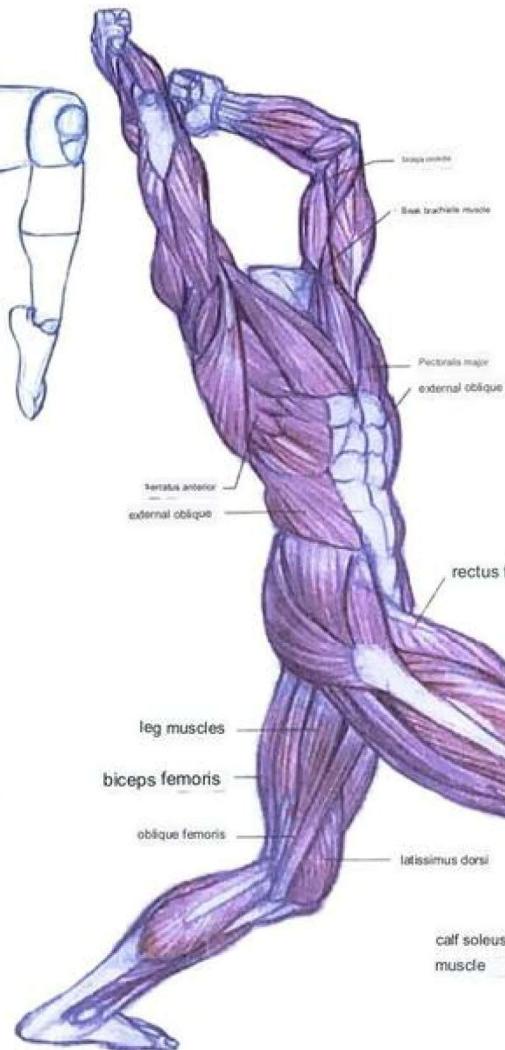
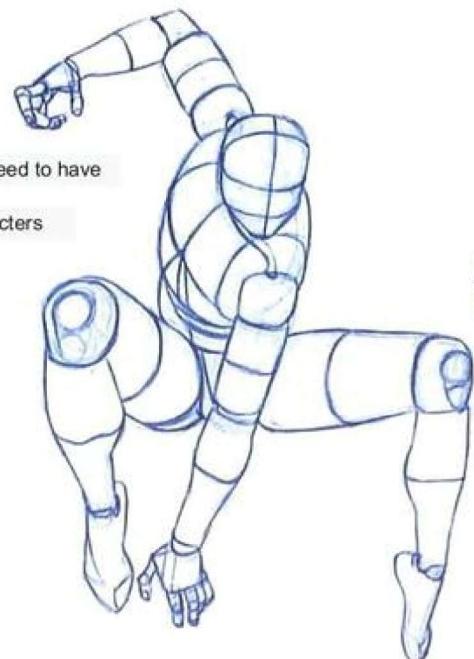
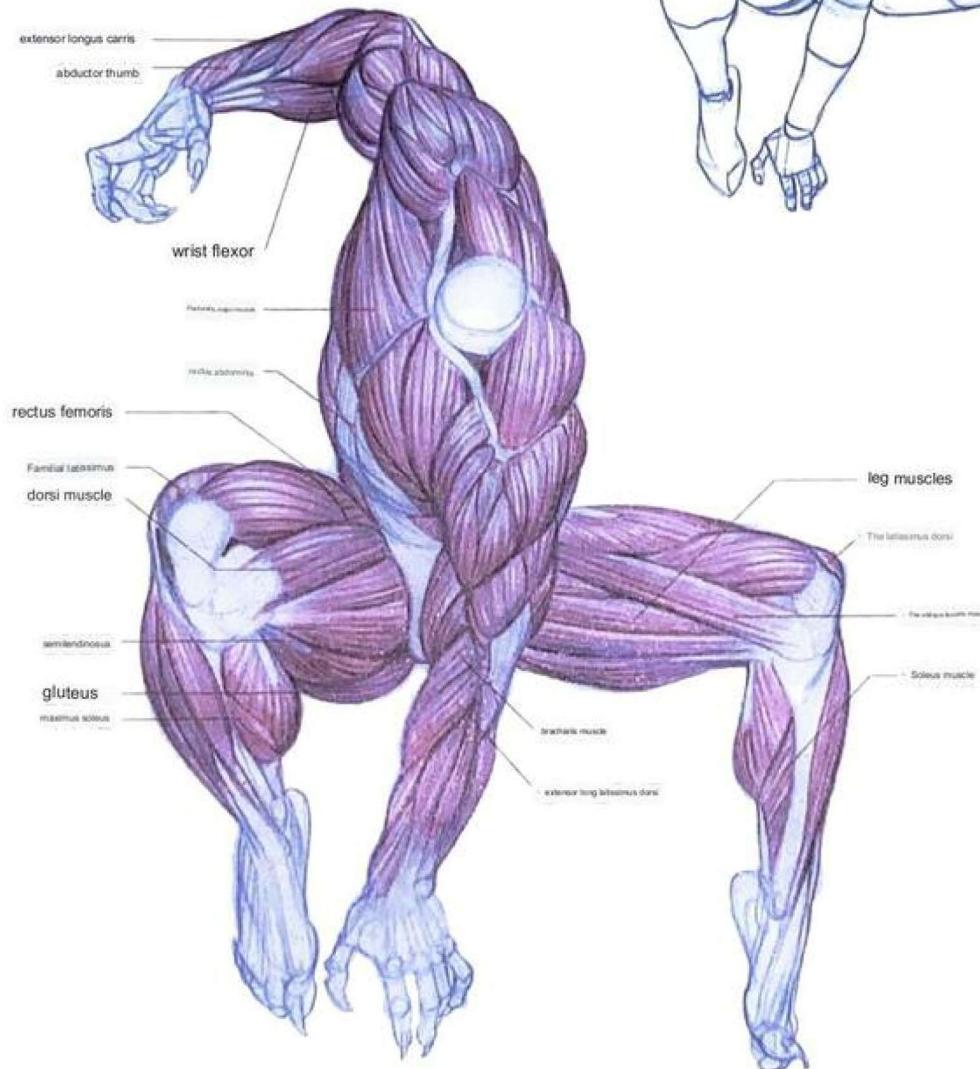
Which should I draw first, a sofa or a character? You should draw a sofa that is larger than the person first. If you think about it simply, it's because a person can't sit without a sofa. You can understand the space through the sofa, and you can catch the motion of the person based on the inclination of the backrest or the spacing of the armrests.



▲ Setting the space  
Even if you draw a person or an object, it is important to set the eye level to draw the perspective line. Like a painting, even drawing a sofa requires perspective.

### Heavyweight muscular body type that appears in superhero movies

As I said before, to draw American superhero characters well, you need to have a good knowledge of the human body. In addition, most of the characters have a muscular body, so it is essential to understand the muscles in the human body. This time, let's compare images of a heavyweight muscular body type and a regular body type.



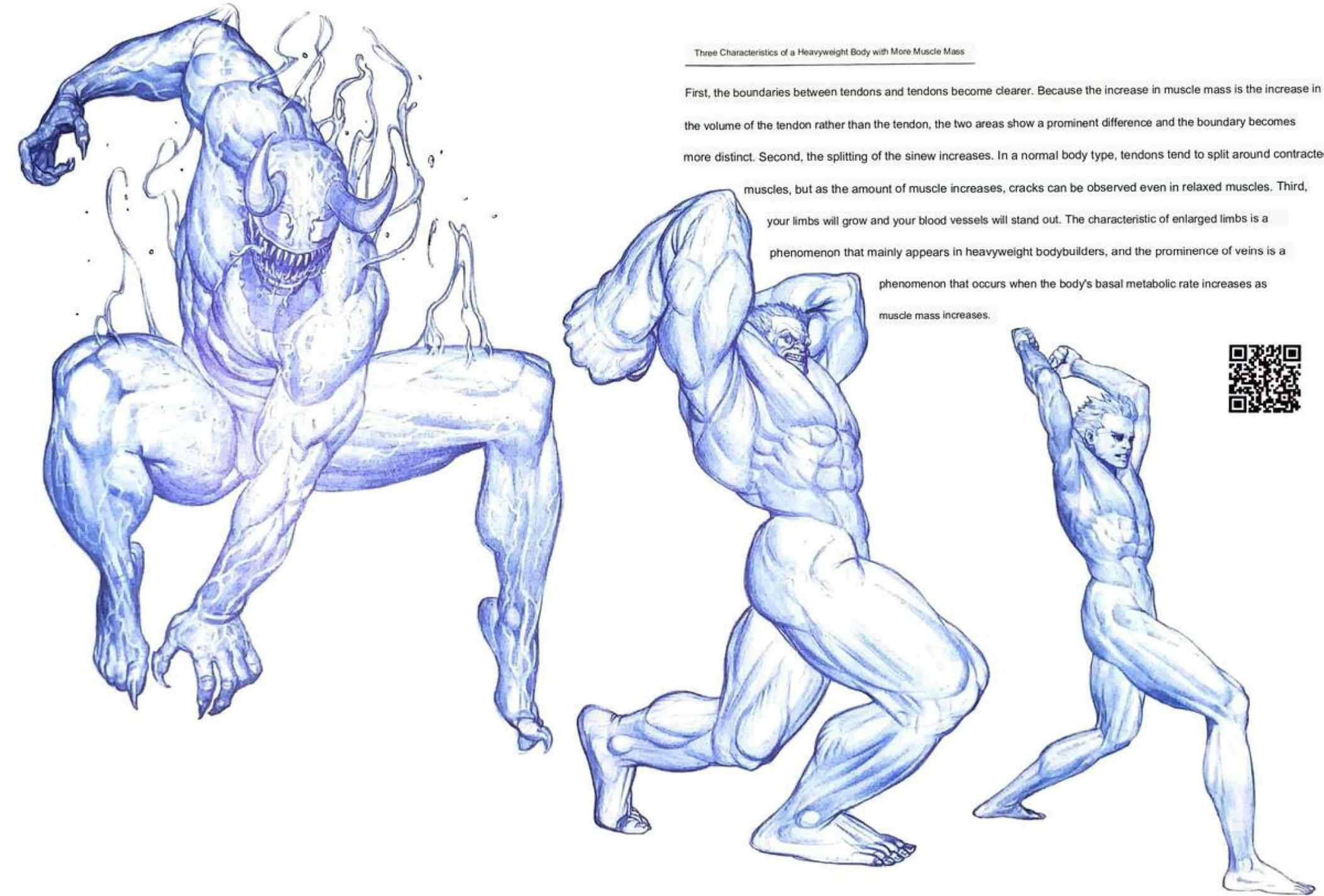
### How to Study the Heavyweight Muscle Model

The reason why it is difficult to study muscles by looking at pictures of actual heavyweight muscle models is because the shapes of muscles are different for each model. Each person has a different ratio of tendons and tendons, and there are differences in the degree of muscle development, so the appearance of the muscles is different. On the other hand, there is little difference between the starting and ending points of the muscle. Studying heavyweight muscles will be much easier if you know where there are differences or where there are no changes. Keeping this in mind, a more convincing human body is completed when the general body shape is deformed into the muscular anti-hero character body shape.



## Three Characteristics of a Heavyweight Body with More Muscle Mass

First, the boundaries between tendons and tendons become clearer. Because the increase in muscle mass is the increase in the volume of the tendon rather than the tendon, the two areas show a prominent difference and the boundary becomes more distinct. Second, the splitting of the sinew increases. In a normal body type, tendons tend to split around contracted muscles, but as the amount of muscle increases, cracks can be observed even in relaxed muscles. Third, your limbs will grow and your blood vessels will stand out. The characteristic of enlarged limbs is a phenomenon that mainly appears in heavyweight bodybuilders, and the prominence of veins is a phenomenon that occurs when the body's basal metabolic rate increases as muscle mass increases.



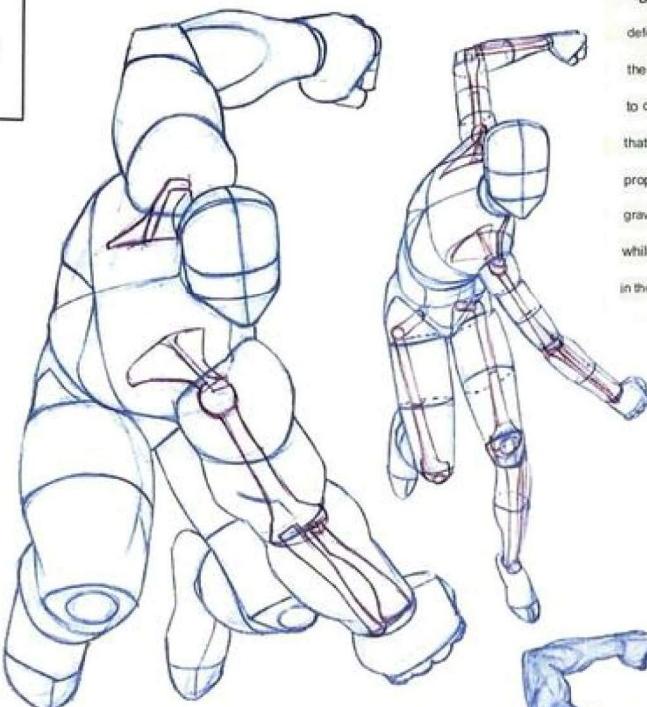
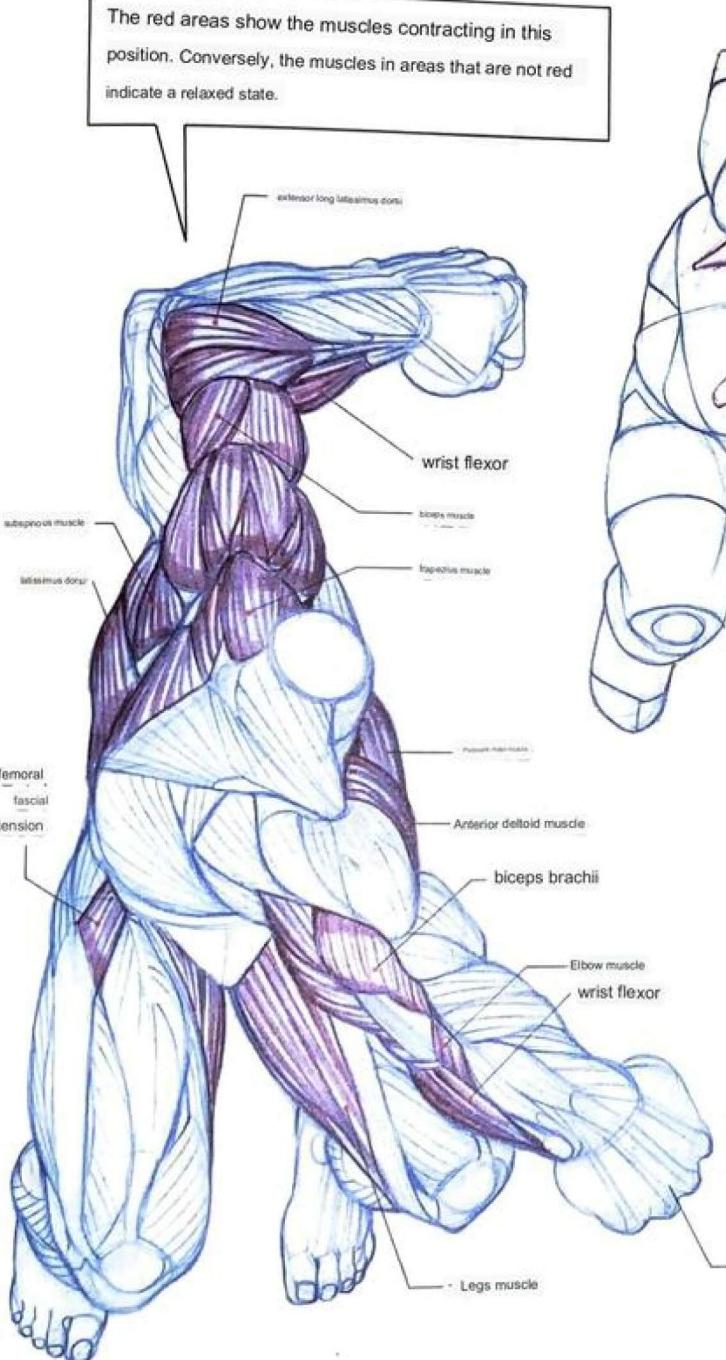


#### Antihero character analysis under attack ▾

The attacking character was designed to reflect a more monstrous feel than the attacking character. The tentacles fluttering from the punched face add to the extraterrestrial feel. If you look only at the big flow of the picture, the relationship between air and water is clear, but if you observe the partial image, you can read the opposite situation. The character's hand movements and tense muscles reveal that he is gesturing to counterattack even while being punched. Also, in contrast to the desperate expression of the attacking character, the laughing expression of the character being attacked implies that he is not receiving damage from the attack, giving a relaxed feeling as if he is being attacked.

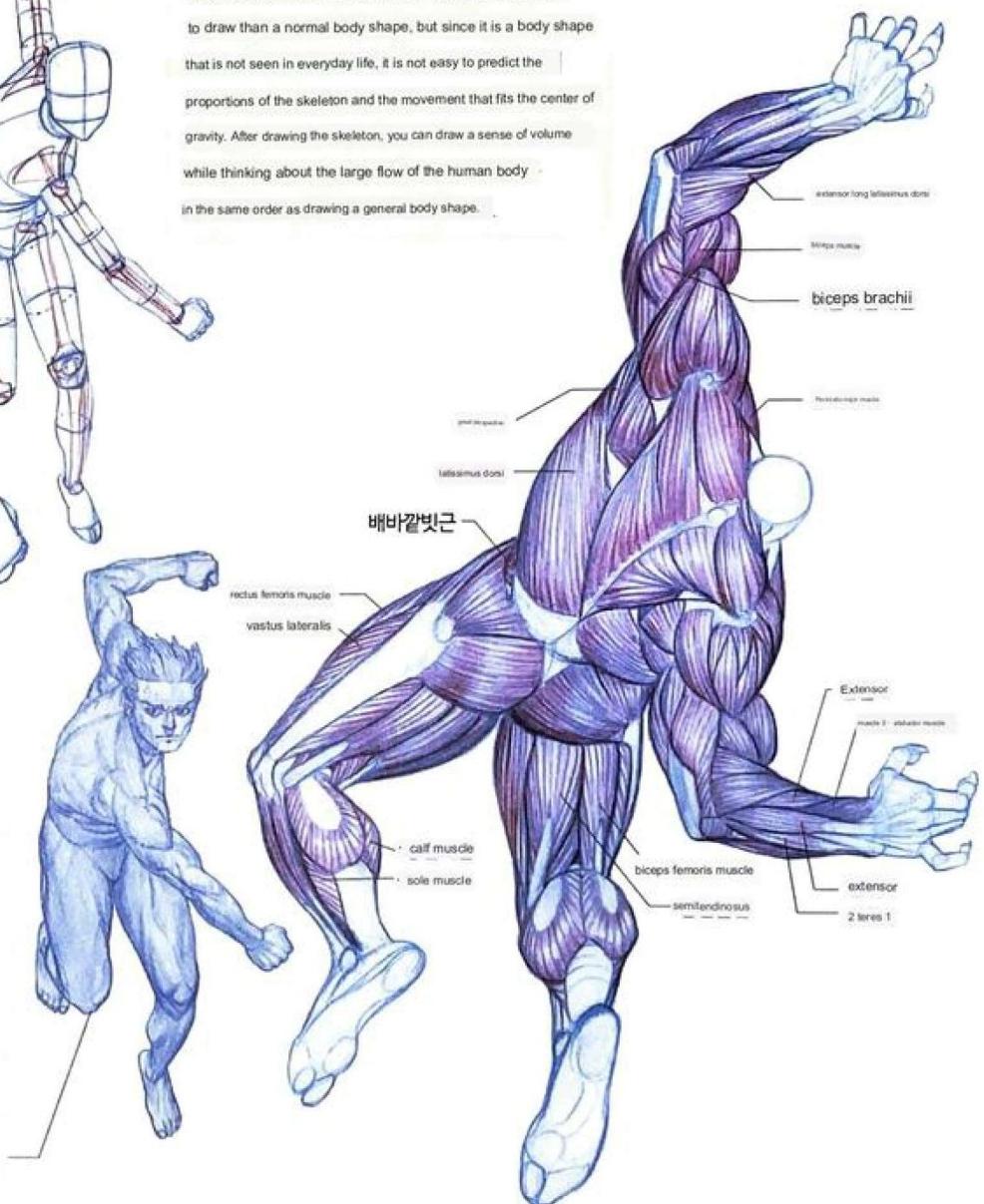
#### Attacking anti-hero character analysis ▾

Anti-heroes are usually created by applying deformation based on a heavyweight muscular body type. Rather than using superpowers in action scenes, we emphasize physical toughness to show the physical clash of strength and power. The attacking character's fist is designed to be large to maximize the power of the punch, and the angle at which the arms look straight shows the direction of the force effectively. In addition, the direction of attack and the direction of fall are the same, allowing the viewer to feel the weight of the punch. The opposite fist is in a position to prepare for the next punch, implying that the attack is a series of unfinished moments. The anatomically precise depiction of muscles can be said to be the most important feature that evokes a sense of reality in American superhero films.



**Deformation based on anatomy**  
In the antihero character on the left, during the deformation process, new muscles that do not exist in the normal human body are created, or existing muscles are not omitted. Since it is a character with only the size and volume of muscles increased from the normal body type, compare it with the normal body type and observe how the shape of the muscles has changed.

\*Deformation of the deformed character  
The deformed character gets out of the normal body shape from the time the skeleton is drawn. You might think that it would be easier to draw than a normal body shape, but since it is a body shape that is not seen in everyday life, it is not easy to predict the proportions of the skeleton and the movement that fits the center of gravity. After drawing the skeleton, you can draw a sense of volume while thinking about the large flow of the human body in the same order as drawing a general body shape.



■ Concepts of various villains



Antihero vs Villain

two characters fiercely

In a hand-to-hand combat scene, the villain tries to subdue the antihero by wrapping it with tentacles, but the antihero fights back with brute force.

By arranging the two characters upside down,

I tried to give fun to the composition that could look monotonous.

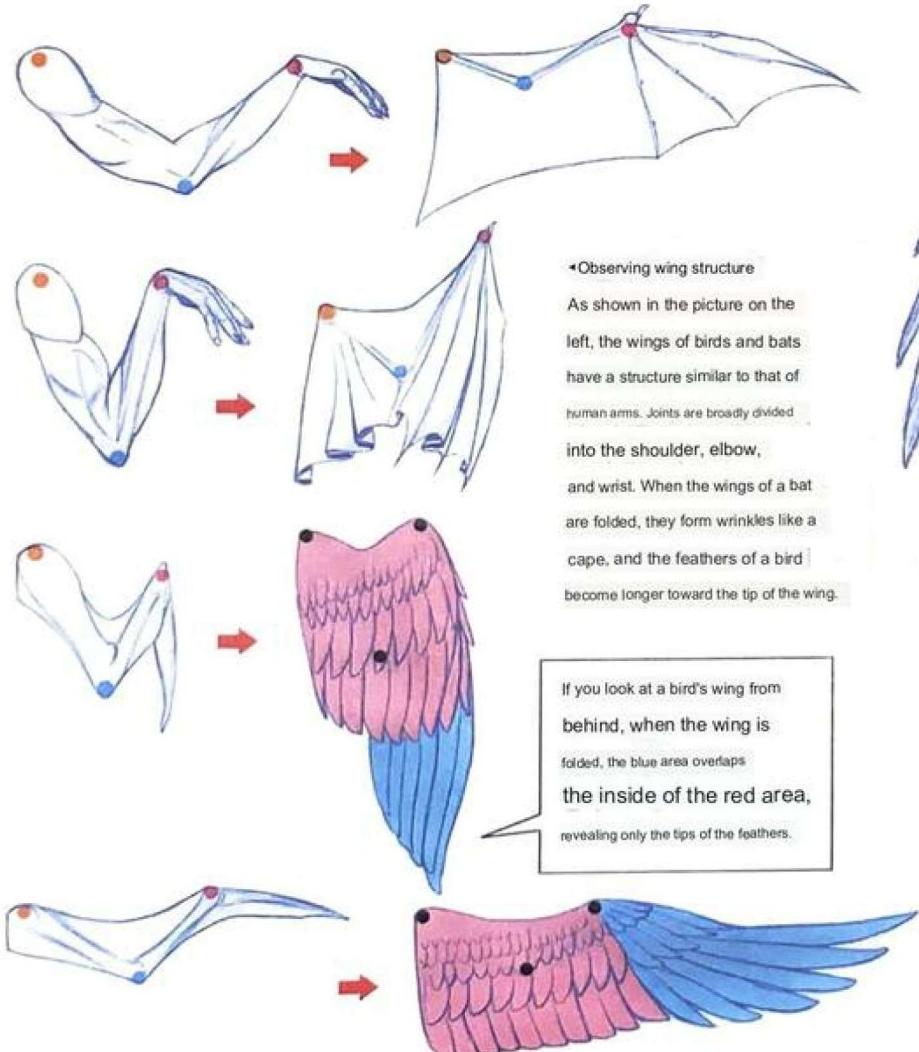




## 2 Drawing fantasy characters

### ■ Beasts

Beasts are a race in which the tails, wings, and legs of animals are combined with those of humans. They originate from the myths of the East and the West, and are often applied in fantasy novels or games. A convincing character can only be created with a knowledge of animal anatomy.



The basic joint structure of bat wings was expressed as a fluttering cape to give it a new feel.

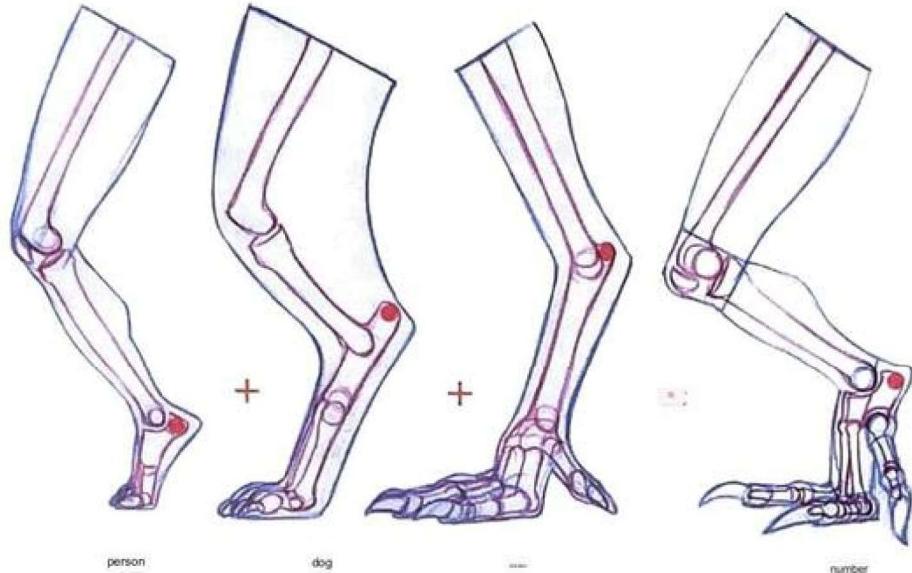


A half-blood of a vampire and a human  
► With the concept of a half-blood born between a vampire and a human, this female character leads a double life as a lawyer by day and a vampire hunter by night. Having only one wing is a characteristic of mixed races, and the size of the wing acts like a tree ring that tells how many years it has lived. When the vampire's ability is exercised, the huge one-sided wing flutters like a cape, and the hunting of the vampire is expressed to make it feel like a knight roaming the battlefield.

The horn on the head and the amulet on the hand are the weakest.  
When the crescent moon rises, instead of the nine-tailed fox's ability  
It is an exorcism tool to use.



Gumiho, a beastman tribe of the Orient ► The theme of the nine-tailed fox, which appears in oriental tales, was designed with the concept of 'exorcism', which hunts ghosts that harm humans. It uses Jakdu and a rope wrapped around its body as its main weapon, and its power grows stronger as the moon rises. The human exorcist who passed on exorcism is set to exterminate evil spirits while traveling with a nine-tailed fox on the condition that he help find the lost fox marble.

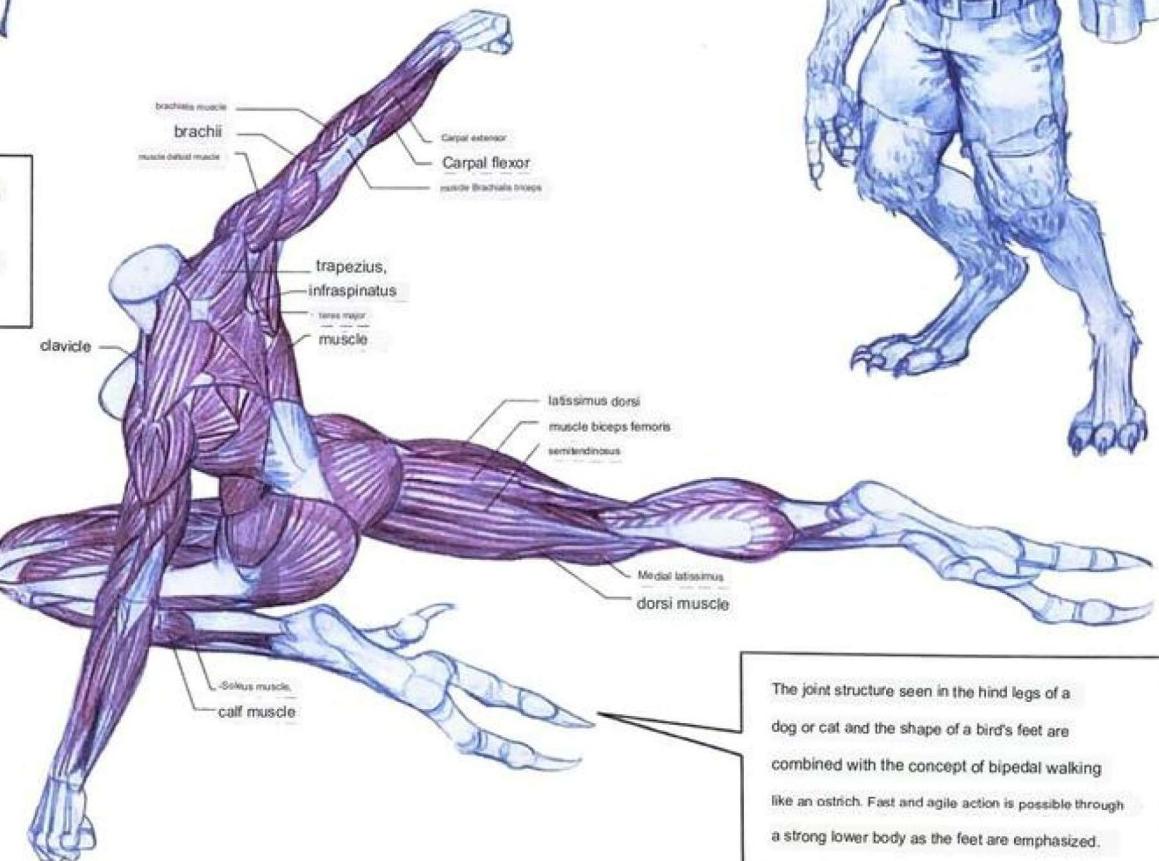
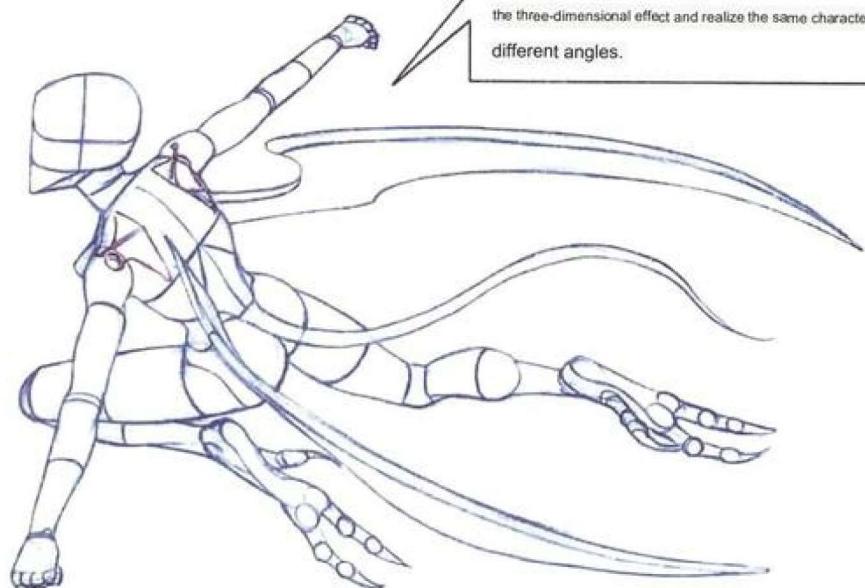


#### ↳ Drawing a beast tribe based on anatomy

If you look at the various types of feet through the picture on the left, all animals except humans have a structure of 'jinhaeng joint' that carries a heel. In the process of evolution to bipedalism, humans have chosen a way of walking that is differentiated from other animals. The paws of the beast characters shown on this page are based on the shape of human legs and feet and combine the characteristics of dogs and chickens. When drawing beasts like this, you need to create a solid creature based on the anatomical knowledge of the related animal.

#### Werewolf Characteristics ▶

Among the beasts, the most drawn race is the werewolf. Although there are differences in the design of each werewolf that appears in the work, it is generally expressed the most with the feeling shown in the picture on the right. It is designed to be able to walk on two legs, with the face and lower body of a wolf and the upper body of a skeleton close to that of a human.



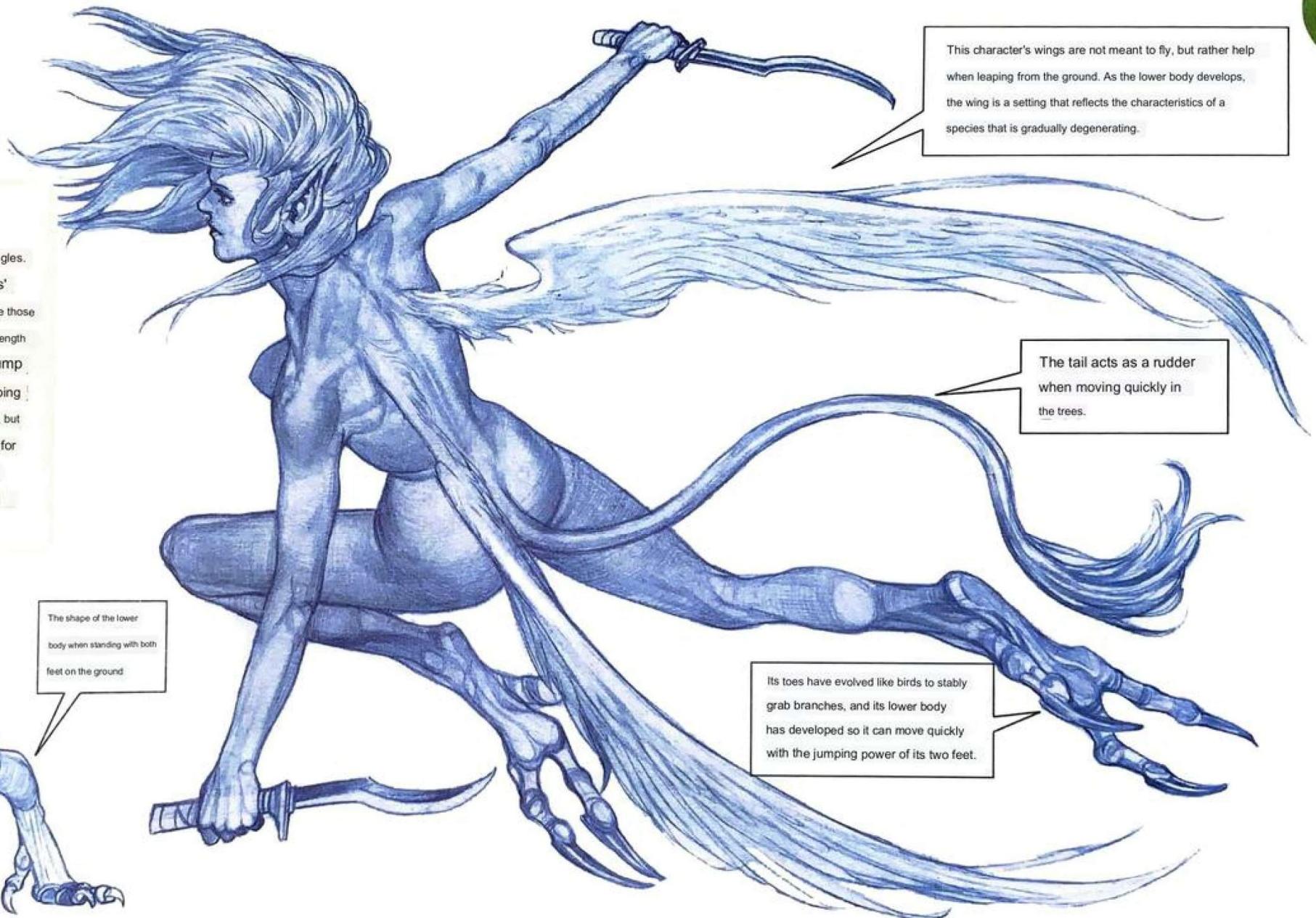
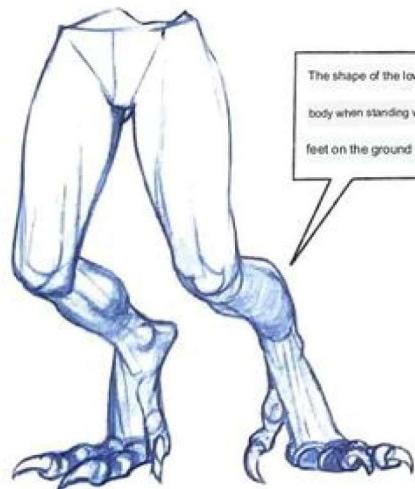
The joint structure seen in the hind legs of a dog or cat and the shape of a bird's feet are combined with the concept of bipedal walking like an ostrich. Fast and agile action is possible through a strong lower body as the feet are emphasized.



## Wood Elf Concept ▶

They are a tribe of beasts  
who live in dense forests like jungles.

They are called 'Wood Elves'  
because their pointy ears resemble those  
of elves. It has strong lower body strength  
and bird's feet, so it can jump  
between trees nimbly, grasping  
branches with its feet. Wings exist, but  
they are used for leaping, not for  
flying. When hunting or fighting,  
a short sword, a two-handed  
weapon, is mainly used.



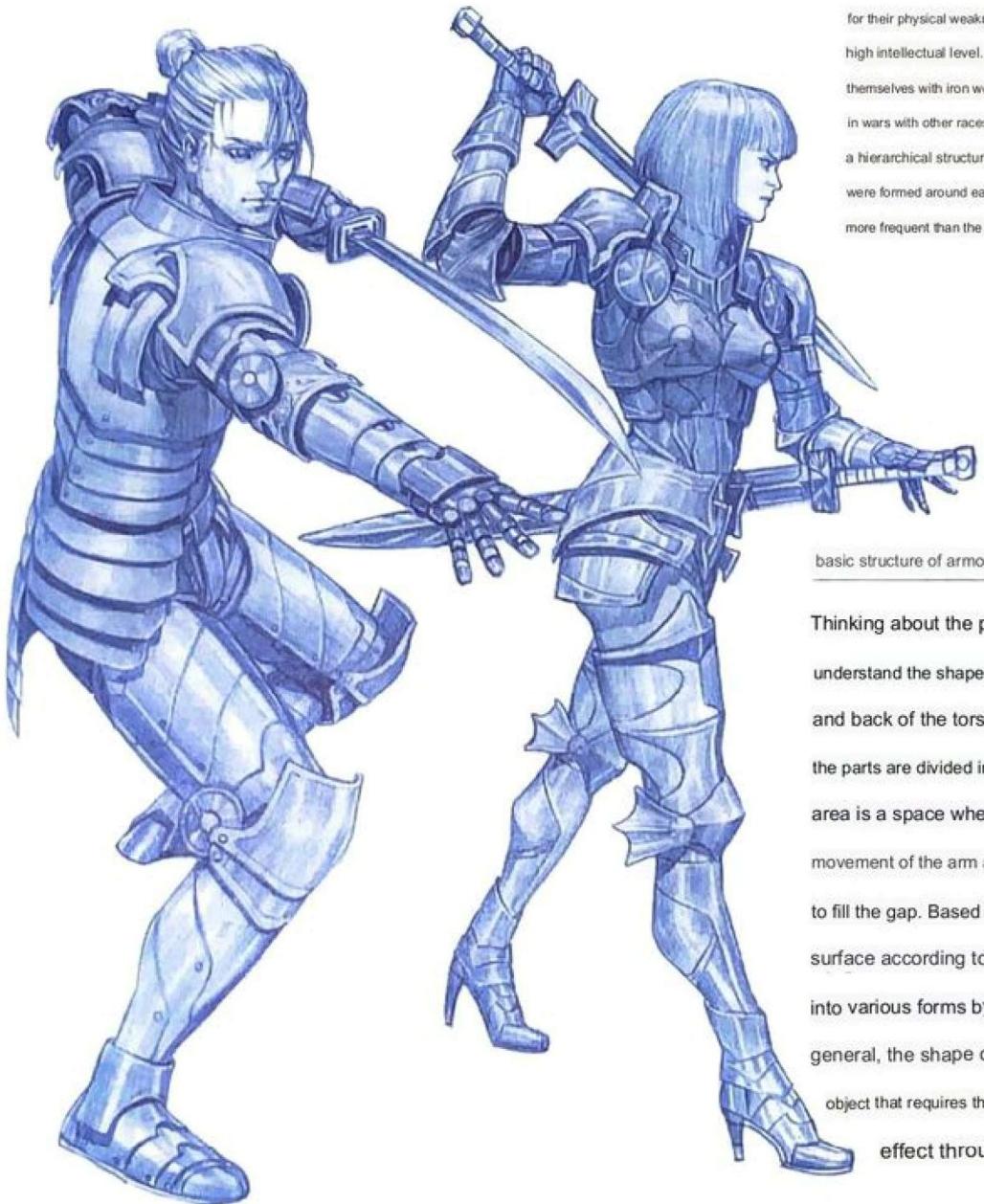
This character's wings are not meant to fly, but rather help when leaping from the ground. As the lower body develops, the wing is a setting that reflects the characteristics of a species that is gradually degenerating.

The tail acts as a rudder  
when moving quickly in  
the trees.

The shape of the lower  
body when standing with both  
feet on the ground

Its toes have evolved like birds to stably  
grab branches, and its lower body  
has developed so it can move quickly  
with the jumping power of its two feet.

## ■ Humans



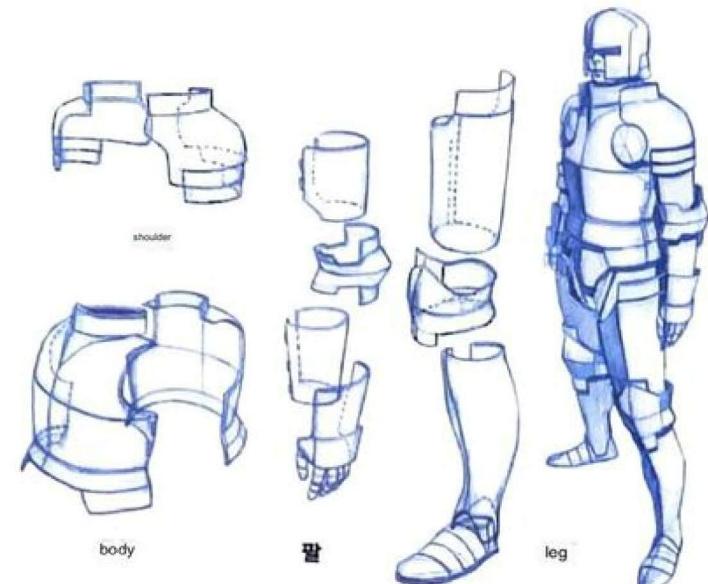
### \*View of the world of humans

Humans, who have the weakest physical abilities among the various races, made up for their physical weaknesses by manufacturing weapons and organizing societies based on their high intellectual level. With the development of iron handling technology, they protected themselves with iron weapons and armor, and with strong solidarity, they won many victories in wars with other races and occupied the largest territory. Soldiers in human societies with a hierarchical structure were divided into armor forms according to clans and ranks, and nations were formed around each clan. As a result, it is a world view that the war between the family is more frequent than the war between other races, and it is declining.

This is a villain character design based on the concept of a family that breaks the peace treaty and wages war against all races in the process of the human race's fall.

### basic structure of armor

Thinking about the process of putting on armor can help you understand the shape of the armor. The structure covers the front and back of the torso and inserts the arms and legs, and the parts are divided into joints for movement. The armpit area is a space where gaps are created according to the movement of the arm and are easily attacked, so a disk is added to fill the gap. Based on this basic structure, divide the surface according to the concept and develop it into various forms by adding various elements. In general, the shape of the armor is symmetrical, so it is an object that requires the ability to understand the three-dimensional effect through figure drawing.





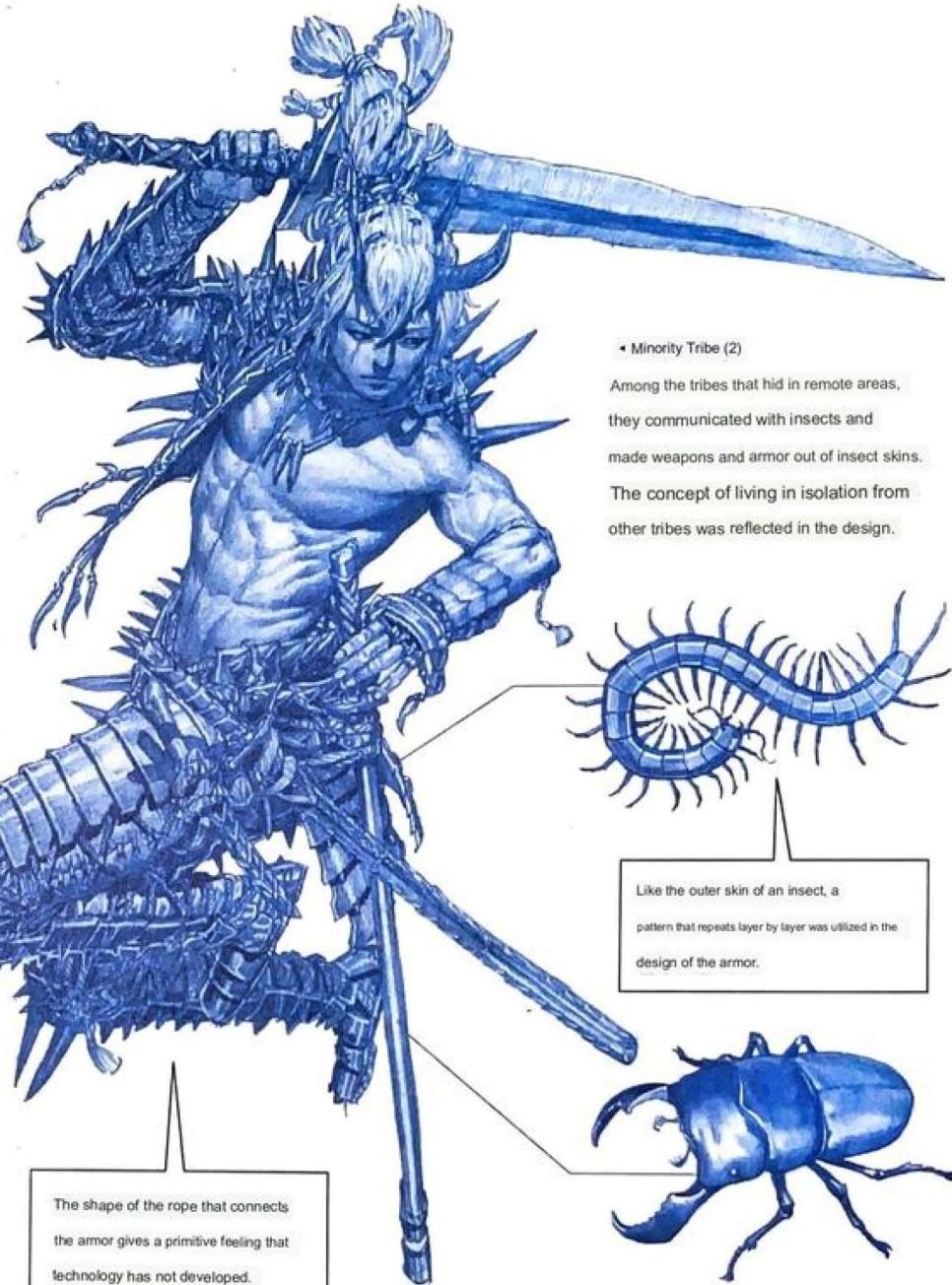
## ★ Minority Tribe (1)

As a tribe that hid in remote areas to avoid frequent wars, it was designed with an eco-friendly concept of making weapons and armor using animal bones and skins. Curved and circular grooves form a pattern to bring out the characteristics of bones in the armor, and it gives a primitive feeling rather than a refined look.

To minimize the artificial feeling, the armor structure of both arms is designed asymmetrically.

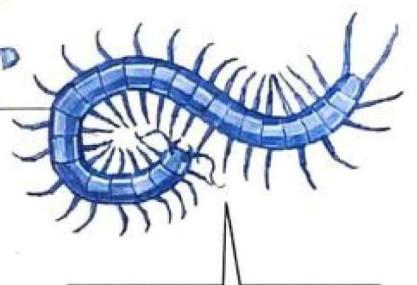


like an animal skull  
The motif is the characteristic of sharp teeth exposed in the flow of curves.

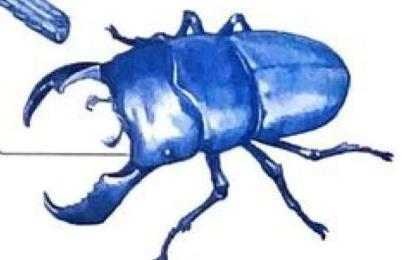


## ★ Minority Tribe (2)

Among the tribes that hid in remote areas, they communicated with insects and made weapons and armor out of insect skins. The concept of living in isolation from other tribes was reflected in the design.



Like the outer skin of an insect, a pattern that repeats layer by layer was utilized in the design of the armor.



The shape of the rope that connects the armor gives a primitive feeling that technology has not developed.



Among the human race, the evil family uses forbidden magic to create new objects in order to maintain their power forever. Humans selected by the sphere created in this way can gain absolute power, but the sphere is set to sleep without anyone choosing it for 300 years.

► The Chosen One

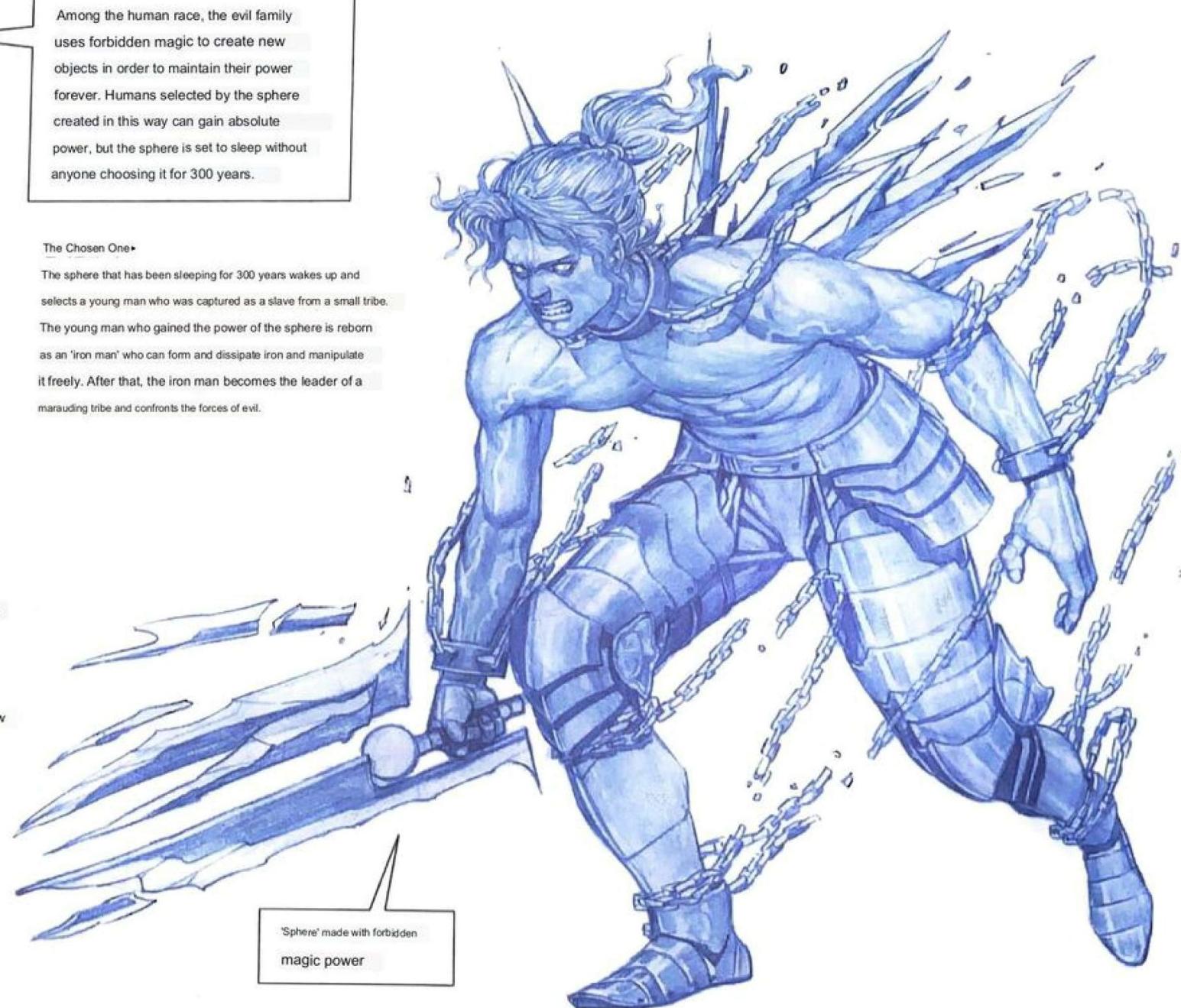
The sphere that has been sleeping for 300 years wakes up and selects a young man who was captured as a slave from a small tribe.

The young man who gained the power of the sphere is reborn as an 'iron man' who can form and dissipate iron and manipulate it freely. After that, the iron man becomes the leader of a marauding tribe and confronts the forces of evil.



► Loot Tribe

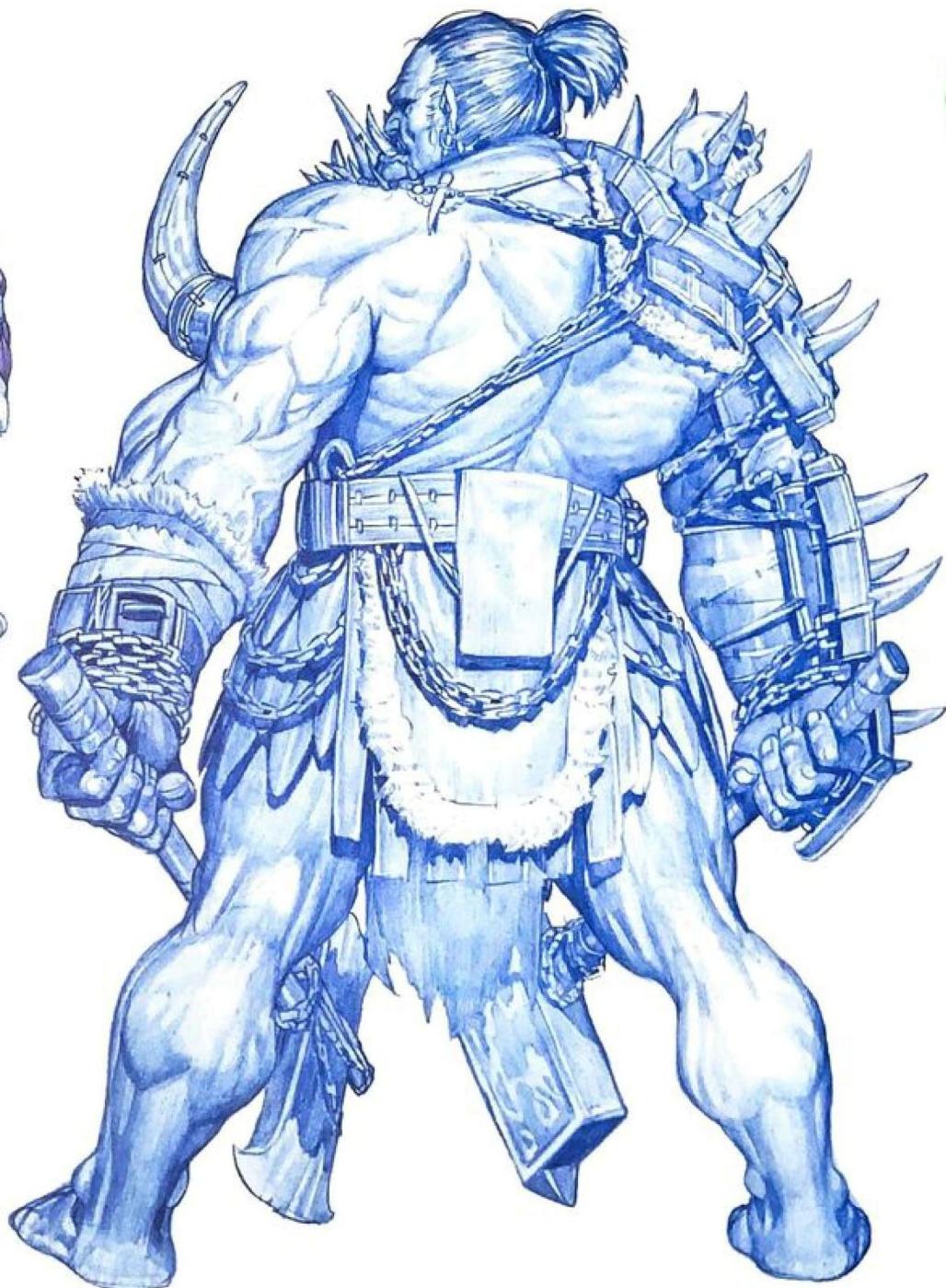
A group of runaway slaves or criminals who plunder remote villages or make a living as mercenaries. In the beginning, there were around 30 members, but as the number of ethnic minorities created by frequent wars increased day by day, a new force united by them was formed.



'Sphere' made with forbidden magic power

Orc concept

Orcs are menacing beings raised solely for combat, and they mainly use skills that deal heavy damage with warhammers or axes to match their huge size. Because the weight of the armor is heavy, the equipment is fixed with a chain rather than a regular rope. They like to decorate the horns of the animals they hunted as trophies. Most Orcs are low-intelligence and warlike, but this character, as the leader of the pack, has the qualities of a leader who leads the race with cool situational judgment and the appearance of a strategist who can devise advanced strategies. It also has the principle of not engaging in unnecessary battles or looting even though it has great power.





### battle in the snow

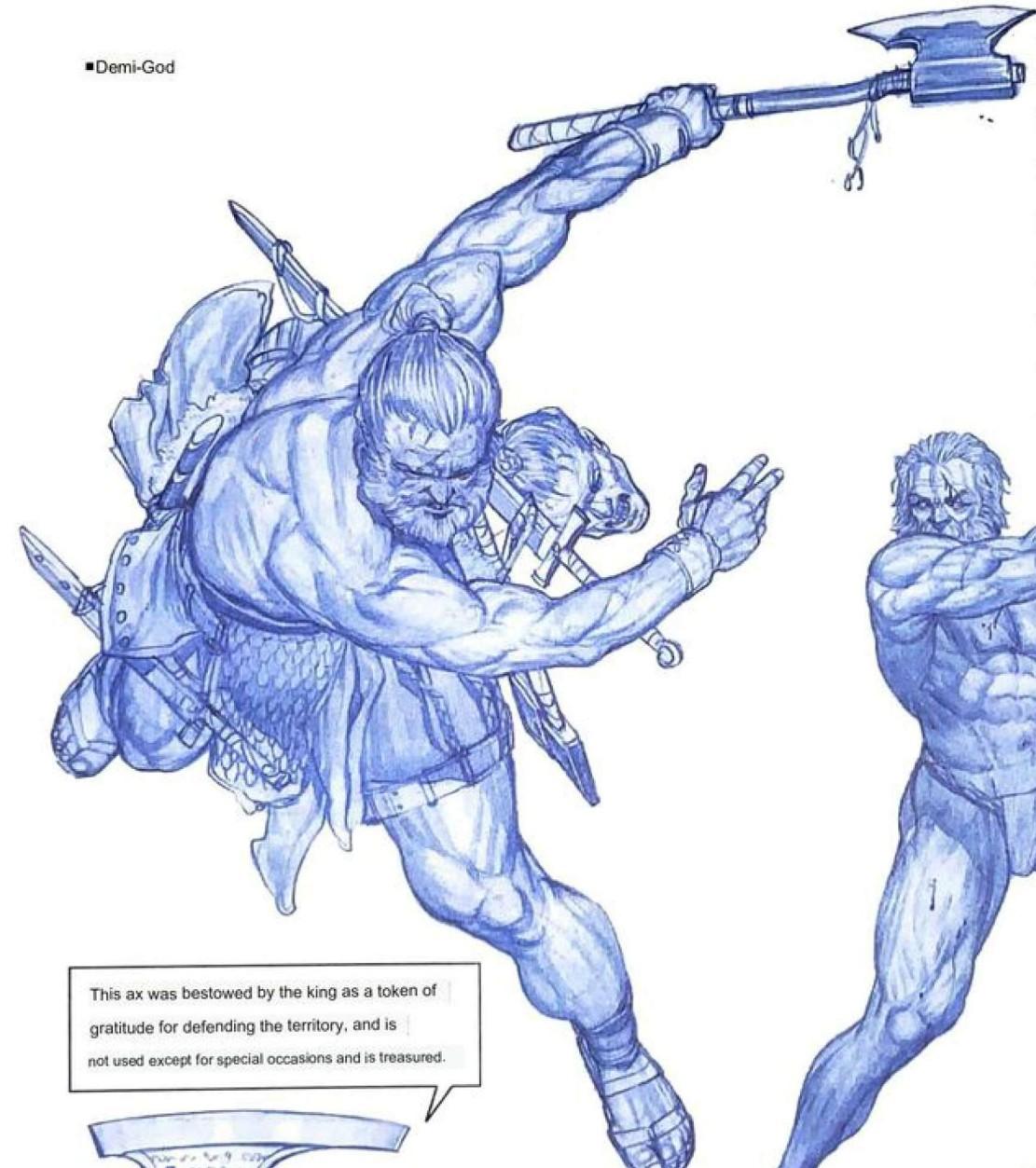
I wanted to express the honesty of the Orcs who never back down even in the inferior situation surrounded by humans. With a strong camaraderie, other races are reluctant to go to war with the Orcs because they have a habit of chasing and killing opponents who pose a threat to their group.



Clash between Orcs and Humans

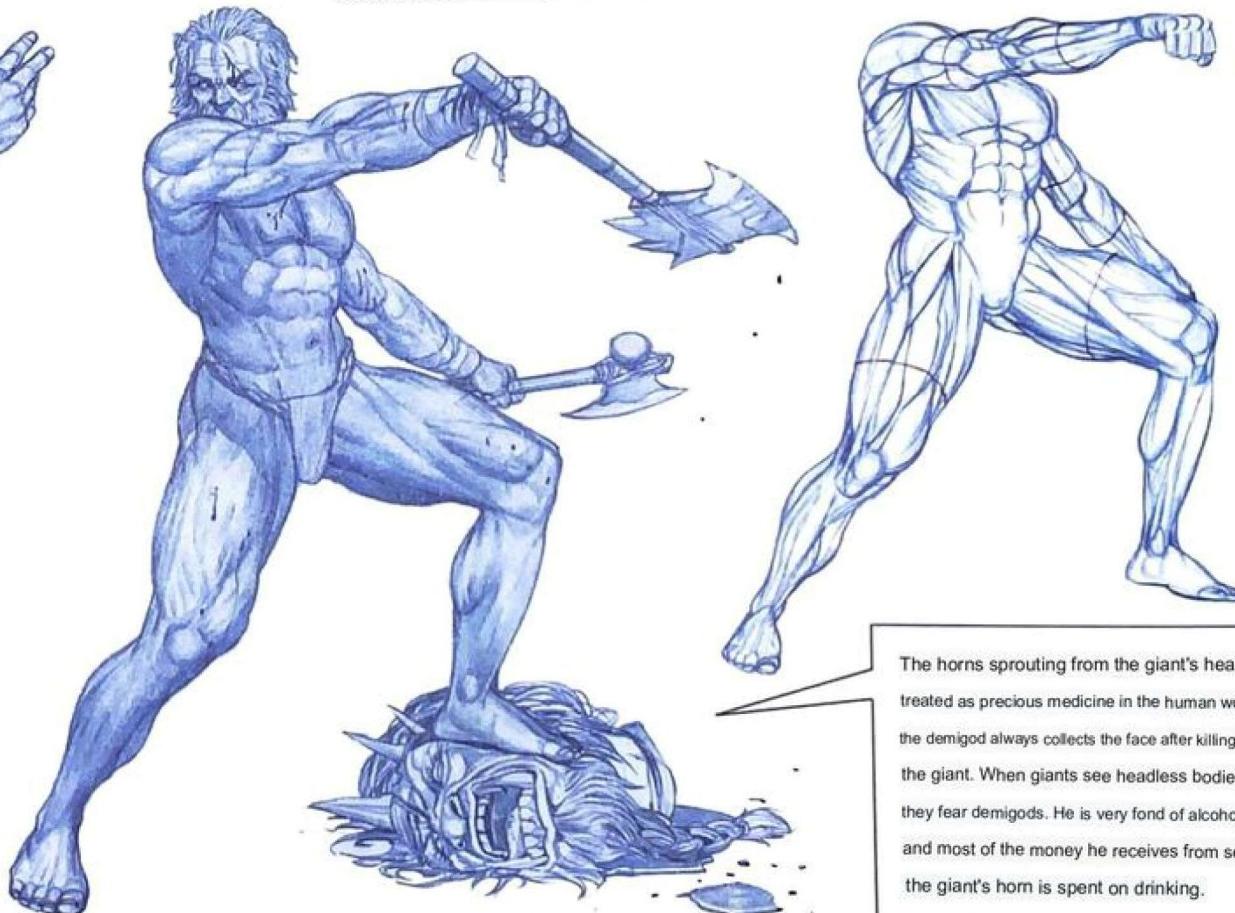
It's an action scene where a human alone is facing an orc, and it's a tight battle that doesn't lean to either side. The shockwaves and cracks in the floor caused by the collision of the two characters have a strong impact.

■Demi-God

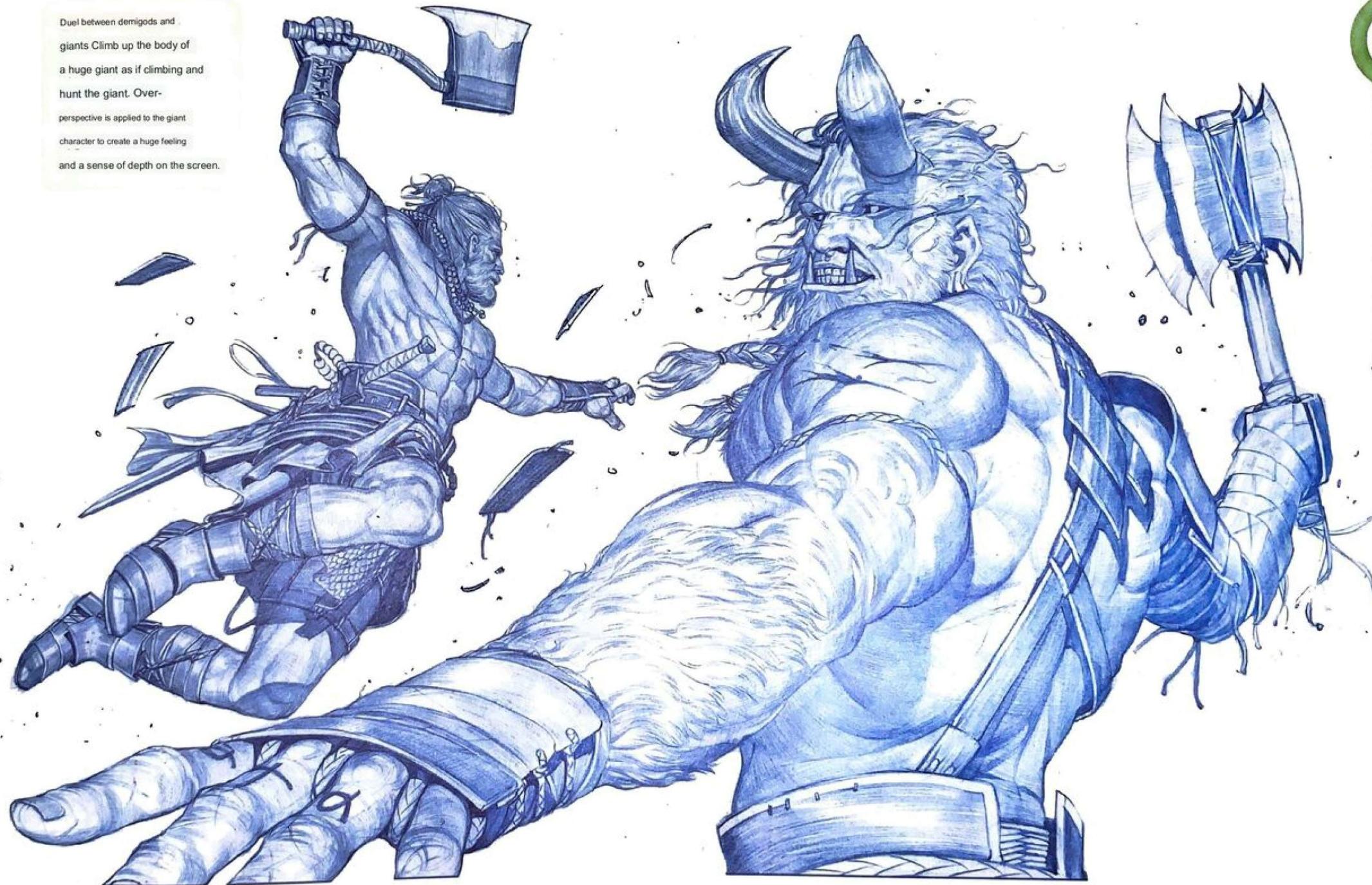


half body concept

'Demigods' are a race born between gods and humans, and there are only 5 of them in the world. As a descendant of a god, they possess supernatural strength and have a long lifespan of a thousand years, but breeding offspring is impossible. As a nemesis with the giants, he is a character with a mission as a guardian to protect the boundary so that the giants cannot come out to another world in order to balance the power in the world. There are also cases of being close to the Orcs and helping each other in battle. Since the giants have thick skin and hard bones, they cannot be dealt with with ordinary weapons, so they are the only blacksmith family that manufactures weapons that can kill the giants and is the only human race that maintains close friendships.



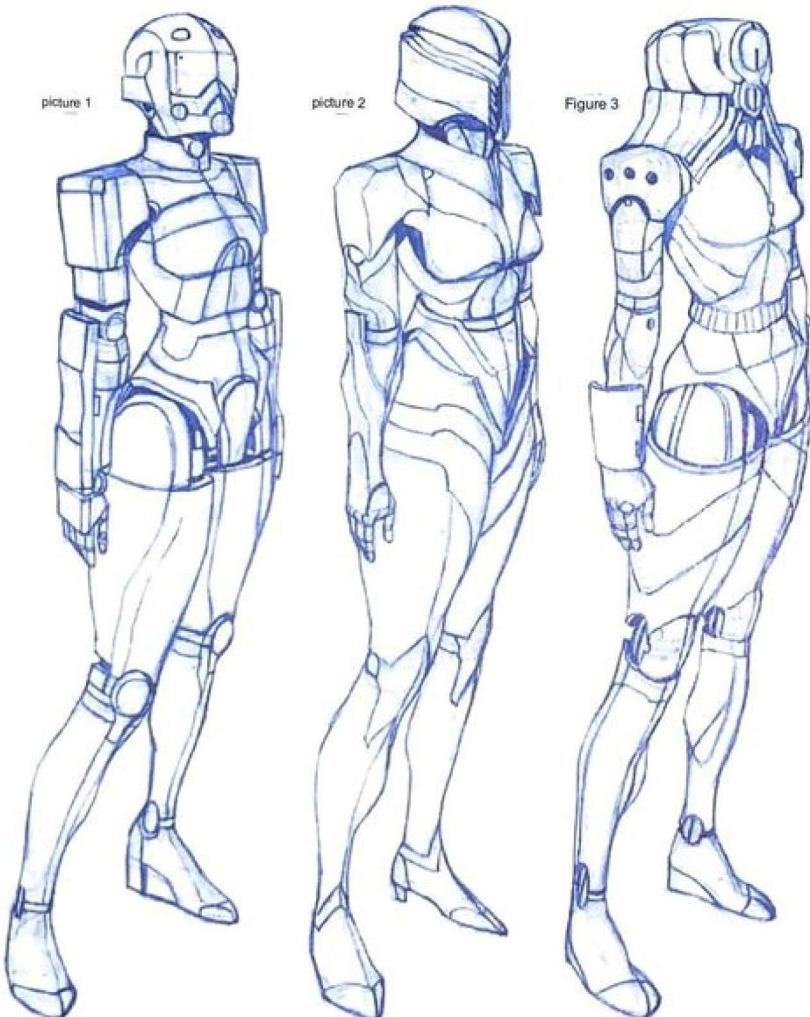
Duel between demigods and  
giants. Climb up the body of  
a huge giant as if climbing and  
hunt the giant. Over-  
perspective is applied to the giant  
character to create a huge feeling  
and a sense of depth on the screen.



### 3 Mechanic Character Drawing

#### ■ Mechanics and figures

Mechanics, artifacts, are literally combinations of shapes. Human figure drawing and mechanics, which divide large figures into small figures, are drawn in a very similar way, and if you have a habit of drawing with figures, you will be able to express mechanics without difficulty. However, if you can't find a big flow in the mechanics of complex shapes, it means that you lack the habit of interpreting the structure with shapes.



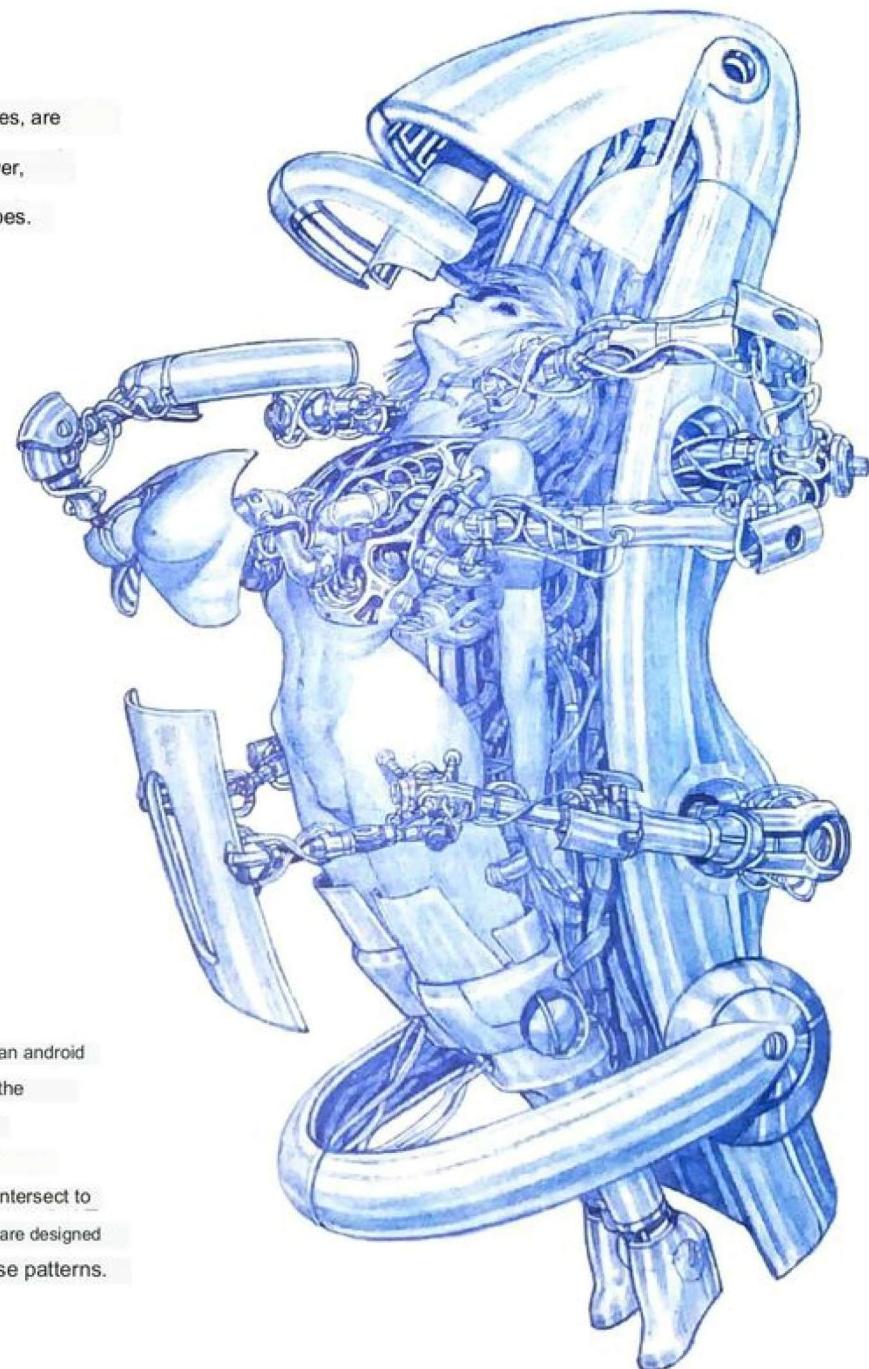
#### ◀Patternize and draw

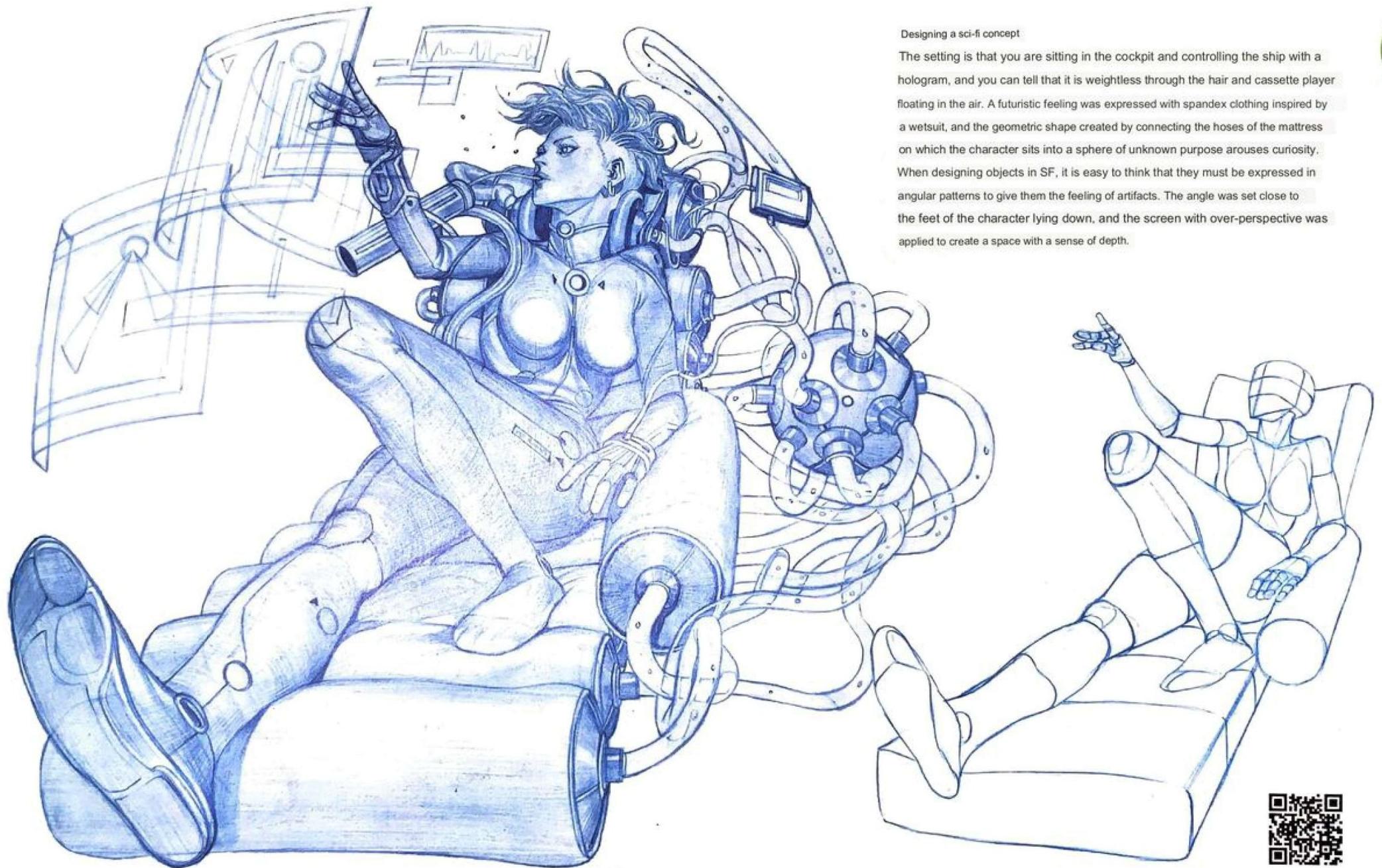
When designing mechanics, it's better to grab a few design concepts and draw them out rather than blindly splitting faces. Figure 1 is a pattern drawn with an angled straight flow, and Figure 2 is a pattern drawn with a wave-like curved flow. Figure 3 shows smooth curves as the main flow while minimizing angular parts. In this way, a sophisticated design with unity can come out only when several patterns are selected and drawn.



#### Mechanic Concept ▶

This picture expresses the process of assembling an android in a large capsule-like machine, and the flow of the structure is expressed in a streamlined form to give it a futuristic feel. Also, to avoid an overly coherent design, the complex and simple parts intersect to give strength to the flow. The parts with open chests are designed to look like real organs, creating more diverse patterns.





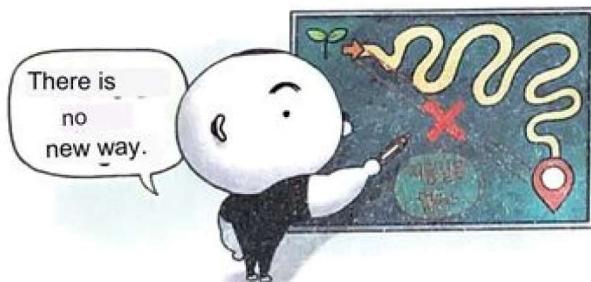
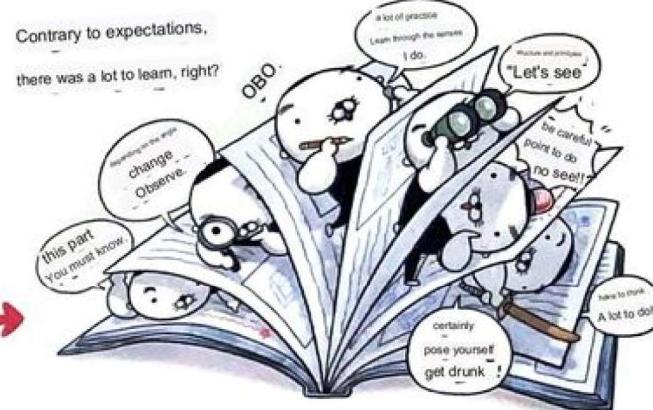
## Designing a sci-fi concept

The setting is that you are sitting in the cockpit and controlling the ship with a hologram, and you can tell that it is weightless through the hair and cassette player floating in the air. A futuristic feeling was expressed with spandex clothing inspired by a wetsuit, and the geometric shape created by connecting the hoses of the mattress on which the character sits into a sphere of unknown purpose arouses curiosity. When designing objects in SF, it is easy to think that they must be expressed in angular patterns to give them the feeling of artifacts. The angle was set close to the feet of the character lying down, and the screen with over-perspective was applied to create a space with a sense of depth.

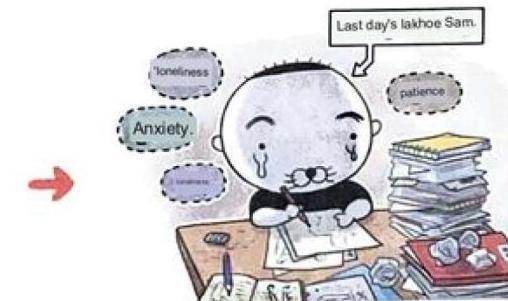




Maybe there were people who opened the book with this thought at first.



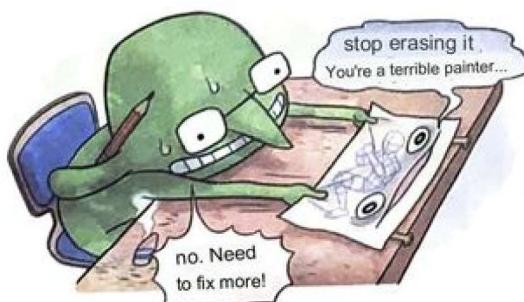
I wanted to say through this book that in order to draw the human body well, there is no choice but to understand the structure and principles.



And for what you learn to apply to your drawing, you must practice over a long period of time.



Only then can you have the concentration to work hard until the end when creating a work.



Rather than trying to leave one by one, if you practice with the mindset of throwing away



Clearly, you are getting closer to your goals.

When you start studying the human body, unless you assume that it takes a long time and a lot of effort to draw well, 'Why is it so difficult?', 'Why isn't it right away?' The more you think about it, the less motivated you become. It is difficult just to draw the human body while looking at a real model, but it is natural that it is difficult to create a person without a model. Even so, when I get stuck on drawing, I put down the pencil and start thinking about my talent. There was a time when I, too, questioned my talents. I think I was able to dig into a well called basic skills because I thought I had no talent for sensuous feelings.

However, even now, I feel difficulties every moment of drawing the human body. Far from getting easier the more you draw, it gets harder every time you draw. I hope that everyone will move forward together with the goal of enjoying the moment of being fully immersed in painting rather than making it easy to draw well. I have a chimney-like desire to revise again because the lacking picture caught my eye, but I will put my regret behind it and thank those who helped me with the book work, and I will cover the bookshelf here.

Park Sang-hee, director of Sang Company, who worked hard several times over to redesign every page to match the picture; writer Yeom Eun-bi, who drew cute characters like star candy in biscuits in a book that could have been heavy and hard; Author. Every time I get stuck in writing, I diligently open [Buddha's Anatomy Notebook]. In addition, the staff at Seongandang Publishing House who patiently watched over the delayed schedule and adjusted many things in the direction I wanted, Professor Yoon Kwan-hyun, who improved the accuracy of the book by taking into account the imagination of the artist even though it was lacking in the eyes of experts, always heart My hero, Professor Lee Hyeon-se, who is my eternal teacher who becomes a beacon for me and who guides me to fulfill my dream. I will always be a disciple who is always diligent with respect and gratitude as the driving force. Lastly, I would like to thank the readers who waited for the book and read it to the end.





